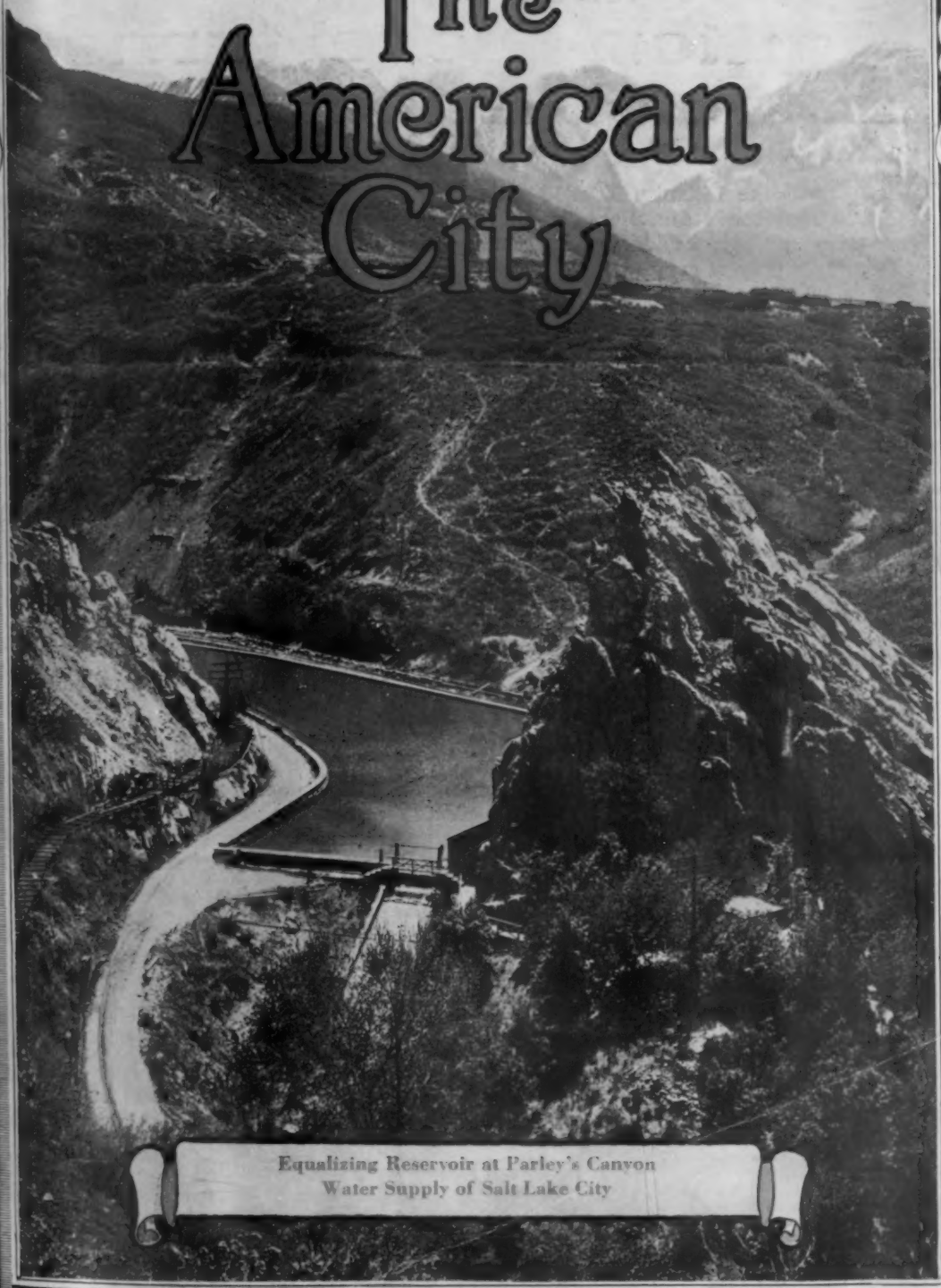
September, 1924

SEP 12 1924

Vol. XXXI No. 3
50 Cents $4 a Year

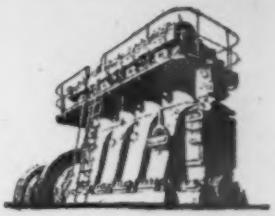
PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

The American City



Equalizing Reservoir at Parley's Canyon
Water Supply of Salt Lake City

How the Fulton-Diesel turns Losses into Profits



In 1918 the Miami (Okla.) light, water and power system steam plant was on its last legs, losing money, besides giving totally insufficient supply of current.

A new deal was necessary and, to insure permanent low power cost, it was decided to install power machinery of the Diesel type. After taking great pains to investigate the various makes of Diesel engines, the contract was placed for a 500-B.H.P. Fulton-Diesel, which was installed in the spring of 1919. In 1921 a second Fulton-Diesel of 585 B.H.P. was added.

Operation during the year 1923 showed a profit of about $36,000.00 against a loss of $12,000.00 with the original steam plant. A saving of $48,000.00 per annum, or enough to repay the entire investment in a little over three years.

Including all charges for interest, depreciation (based on a life of 20 years), maintenance (larger than actual), the cost per K.W.H. was $0.0136.

The Plant Superintendent states: "We feel that our choice of equipment has enabled us to manufacture electric current at a cost comparable with that of large central stations."

The application of Fulton-Diesel economies to your power problems is worth investigating. Anywhere and at any time our staff of experienced Fulton-Diesel engineers will gladly consult with you, and without obligation. Executives and engineers are cordially invited to visit our plant. To anyone requesting it we will send, free and postpaid, a carefully prepared and fully illustrated booklet describing the Fulton-Diesel in detail.

The facts and figures given above were secured by an independent engineering organization, and are related just as furnished in their report.

FULTON IRON WORKS COMPANY, ST. LOUIS, U. S. A.

Successful engine builders for over seventy years

BRANCH OFFICES:

New York—82 Wall St.
New Orleans—Hibernia Bank Building
Dallas, Texas—Praetorian Building
Havana, Cuba—401-402-403 Banco Nacional

FULTON-DIESEL

VOL. XXXI No. 3 THE AMERICAN CITY, September, 1924 Price, 50 Cents; $4 a Year
Entered as second-class matter, July 29, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879
Issued Monthly by The Civic Press, 443 Fourth Ave., New York Printed in U. S. A.

Vol. XXXI
No. 3

The American City Magazine

SEPTEMBER
1924

443 Fourth Ave.
NEW YORK

50 Cents
$4 a Year

A Program for Fewer Deaths at Railroad Crossings

HOW much longer shall we accept, as a common and almost commonplace occurrence, such accidents as the accompanying newspaper headings record? Is human life in America so cheap that the death at railroad grade crossings of four or five persons and the injury of twelve to fourteen others, as the daily average throughout the year, can stir us to no more adequate thinking and action than we have yet taken?

To be sure, railroad grade crossings are being gradually abolished. But in New York State, where the most rapid progress might reasonably be expected, some 8,000 grade crossings still exist. An important forward step has been taken by the New York Legislature this year in the approval of a proposed constitutional amendment to permit the loaning of the state credit to railroads and municipalities, so that their share of the cost of eliminations may be financed in the first instance by the state, the amounts thus advanced to be repaid in annual installments; the railroads' ultimate share of the total cost being 50 per cent; the municipalities', 25 per cent; and the state assuming the remaining 25 per cent. But this constitutional amendment cannot become effective until it has received the favorable vote of the 1925 Legislature and has subsequently been approved by the people; and even if thereafter elimination of grade crossings were to go forward at the rate of 200 a year—involving an annual cost, as estimated by the Pubilc Service Commission, of $20,000,000—it would require forty years to complete the job.

Meanwhile, in New York State and elsewhere, what are we going to do about it? Until we can get rid of them entirely, how shall we render more safe the 250,000 railroad grade crossings to be found throughout the United States? To help answer this question, THE AMERICAN CITY has made a study of numerous efforts and suggestions already made, and offers the following program for the consideration of public officials, railroads and motorists:

1. At the approach to every grade crossing there should be a more adequate warning than the "Look Out for the Cars" sign inherited from the leisurely days of the horse. The motorist should know at a distance of 250 or 300 feet that he is nearing a grade crossing—and the warning should be given him by a sign of uniform and distinctive color, shape and position, the meaning of which he will instantly recognize.

2. There should be a clear view of the crossing for both the motorist and the locomotive engineer. Where obstructions exist at crossings not protected by gates, such obstructions should be removed so as to clear the field of view for a distance of 250 to 500 feet along the road on each side of the railroad, and for 500 to 1,000 feet along the railroad itself.

Express Kills Four As It Strikes Auto At Grade Crossing

Two Couples Die at New Lisbon, Leaving Eight Children Orphans.

FROM THE NEWARK (N. J.) EVENING NEWS, AUGUST 5, 1924

3. The crossing of the highway and railroad should be approximately at right angles; the width of the roadway at the crossing should be fully as wide as the combined pavement and shoulders of the road; the surface should be smooth and approximately level for a distance of at least 50 feet on each side of the railroad; and beyond this limit approach grades should not exceed 5 per cent.

4. In addition to the advance warning sign mentioned in paragraph 1, every crossing should be provided with reliable automatic signals, giving warning to the ear by means of a gong, and to the eye, both by day and night, by a swinging or flashing sign; and also, at the more important crossings a watchman, with or without gates. It has also been suggested that in sections which are poorly lighted at night, a large electrically lighted rectangular sign carrying the word "Danger" in red letters should be suspended directly over the center of grade crossings.

5. The so-called "island" or "fool-proof" construction which provides an obstruction in the traffic stream, compelling the slowing up of traffic at grade crossings, has been tried to a limited extent, and may merit further experimentation.

6. In at least five states, traffic laws require all automobiles (with, in some cases, exceptions) to come to a full stop before crossing a railroad at grade; and such laws, much varied in detail, are in force as regards carriers for hire, in no less than sixteen states. Seven states have regulations, applicable to all automobiles, requiring a reduction of speed but not calling for a full stop.* It is obviously idle to expect a hundred per cent compliance with such laws; but the reduction in accidents which has resulted in certain cities from compelling automobiles to come to a full stop before crossing "through traffic" boulevards suggests the possibility of educating motorists more generally to treat railroad crossings with similar respect.

Instead of requiring all automobiles to stop at every railroad crossing, it has been suggested that State Highway Departments be authorized by law to designate with appropriate signs the more dangerous crossings, before which (unless protected by a watchman) a full stop shall be made; and that motorists be advised, but not required, to stop in a similar manner before all other grade crossings.

7. Interurban electric railway crossings are danger spots deserving much the same consideration as those of steam railroads.

8. To make effective the foregoing program, and any other plans for reducing the grade crossing toll, a more effective coordination of forces in each state is desirable. An opportunity for civic service of the first importance awaits the leadership, in the various states, of citizens' organizations or governmental bodies which have the energy and public confidence to become the coordinating force, be they State Chambers of Commerce, State Automobile Associations, State Highway Commissions, State Railroad or Public Service Commissions, or State Leagues of Municipalities. Such a state-wide movement might well have a three-fold object: (a) more rapid elimination of grade crossings; (b) increased protection at existing crossings; and (c) more effective education of motorists in common sense as expressed in the American Railway Association's new poster—"Wait, You May Lose."

* For an analysis of the various state laws regulating vehicles at crossings, and an editorial on "Lawmakers' Efforts to Make Crossings Safe," see the *Railway Age* for November 3, 1923.

SEVEN CARS DERAILED IN CRASH WITH 10-TON TRUCK NEAR CRANFORD

Driver and Helper on Automobile, One Passenger and Fireman Are Instantly Killed—Engineer Has Both Legs Broken—Baggage Car Piles Up in Wreckage.

FROM THE NEW YORK EVENING WORLD, AUGUST 21, 1924

Comments Invited

THE AMERICAN CITY invites for publication in a future issue, comments on the foregoing program for fewer deaths at railroad crossings, and information regarding other methods which are proving effective.

Planning the Financial Program for the New Water-Works in the Small Town

By Richard Messer

Chief Engineer, Virginia State Board of Health

CAN the small town afford a water-works system? Will the yearly income, at reasonable rates, be sufficient to cover the interest, sinking fund and operating charges, or will it be necessary to make the rate successive in order that the water-works may be self-sustaining? These are the questions which will be in the mind of every citizen when he or she votes on the bond issue.

The following discussion with regard to the income which may be expected at given rates, the operating expenses and the approximate first cost of the water-works system in a town of 1,500 population may be helpful to local officials who have under consideration the question of a new water-works. The methods as outlined for estimating the quantities of water which will be paid for and how the rate schedule should be worked out, may be used for towns and small cities of less or greater population than is assumed in the examples.

How to Finance

This is the big problem, particularly for the small community wishing to build its first water-works. This study has been specially prepared to crystallize the best practice in financing a well-considered plan. A proper sequence in studying all of the physical features is necessary even before financing may be considered.

Primary Considerations

That a public water-supply for even the small village of 300 or 400 inhabitants is desirable is admitted. As the town grows larger a common supply becomes a necessity for health reasons and for protection against fire. At what stage in the growth of a given place the people will decide to vote bonds for water-works is dependent upon many factors, such as the nature of existing private supplies, the ever increasing danger of fires, especially in the business districts, the topography, the number of miles of pipe which will be required to reach the majority of houses, and finally whether there are one or more industrial plants which will purchase a considerable portion of the water. Due to the variation in local conditions, the first cost for water-works systems may range all the way from $30 per capita to $100 per capita. The yearly operating expenses, in addition to the interest and sinking fund charges, likewise cover a wide range for obvious reasons.

The issue of bonds for a new water-works is an important step in the history of any town. Before a majority of the citizens will be in favor of incurring a thirty-year debt, they must be convinced that the revenues will be sufficient, or nearly so, to meet the operating expenses. The logical manner of obtaining the information is first to employ an engineer to make an investigation and report on the best supply available and the cost of the works complete, and then to estimate the annual revenues and state the rates on which these are based. The proper way is first to ascertain the cost of the investment and operating expenses and from these determine the schedule of rates.

Public sentiment in favor of a water-works does not change over night. Before the engineer is called in, the matter has been discussed for several years, in fact many of the thinking citizens have practically declared themselves in favor of the move. Of course there are numerous instances on record where a sudden decision to install a water-works has been brought about by a severe typhoid epidemic or a serious conflagration.

Use of Water

Although it is well known that the per capita consumption varies from 30 up to 150 and sometimes 200 gallons per day in different places, the water actually used for ordinary purposes (that part classed as domestic) is approximately the same for places of smaller size. As cities increase in size the per capita consumption increases usually at the rate of one or two gallons per year on an average. The variation spoken of above for different places is due to quantities furnished for industrial purposes, leakage and waste. Fur-

thermore, it must be remembered that the figures for the per capita consumption are in most cases based on the quantity of water delivered into the distribution system and are not the quantities actually sold. A superintendent who can account for 85 per cent of the water which enters the distribution system is doing very well. In many places the water unaccounted for exceeds 25 per cent.

Therefore it is possible to estimate for a given place, with a fair degree of accuracy, the quantities of water which will be sold for domestic purposes as classified in the schedule adopted below and also the approximate number of services and quantities of water which will come within the intermediate classification. Water for manufacturing purposes as classified in the schedule obviously must be ascertained for each place. This information is usually available.

It is realized that the method of procedure as outlined is not in accordance with the advice given at the beginning of the discussion. However, by assuming certain charges for water, which charges are believed to be reasonable, and on the basis of these estimating the revenues and then the operating expenses, some idea may be obtained as to the amount of money which may be invested in the water-works system.

Sources of Revenue

The figures for water sold which are used in the tabulations given below, are based on averages for several towns each of about 1,500 population. It is believed that the averages, 100 gallons per meter per day for domestic use and 1,500 gallons per meter as coming under the intermediate classification, are conservative.

In devising a schedule of rates, the primary object is to so distribute the charges that property owners and water consumers will pay in proportion to the service actually rendered. Every water-works system, including the storage reservoir, pumping station, supply lines and distributing pipes, is designed for the purpose of furnishing fire protection as well as water for other uses. For towns and cities up to 5,000 and even larger, the cost for fire protection requirements usually ranges from 50 to 75 per cent of the entire cost of the works.

Thus it is seen that for small cities at least half of the money expended is primarily to protect property. The individual or company owning a building valued at $100,000 should pay more for its protection than the individual who owns a house valued at only $5,000. Consequently the charge for the service should not be based solely on the quantity of water used because only 3,000 gallons per month may be furnished to the large building while the family in the home may use as much or even more. Hence a certain portion of the revenue should be taken from the general tax fund or obtained by special taxes assessed according to the value of the property protected.

Keeping in mind a fair distribution of charges in accordance with value of service rendered, how much of the revenue should be obtained by the taxes on property? The most scientific discussion of this subject is contained in the report by Metcalf, Kuichling and Hawley printed in the *Proceedings* of the American Water Works Association, 1911, pages 62-149. Since then there have been numerous decisions by public utility commissions fixing the amounts of revenue for fire protection service for places of different sizes. For a population of 1,500 a total amount of $2,250 per year for fire protection service is reasonable. For a population of 2,000 the revenue should be $3,000 per year, which is an amount equal to $1.50 per capita. For cities larger than 5,000 the proportionate amount begins to decrease gradually.

The remaining revenues should be derived from:

(a) Service charges

(b) Sale of water

The service charge, or in other words, a charge to take care of the maintenance of service and meter, is now recommended by both the American Water Works Association and the New England Water Works Association. For reasons as given in the final reports, the service charge is much more fair to the water consumers as a whole than the usual minimum charges that are in vogue in many cities.

In these same reports the quantity of water per month or per quarter, as the case may be, is also recommended as most fairly distributing the charges among domestic, intermediate and manufacturing consumers. The schedule is also more simple than the complicated "slide scales" customarily adopted.

In the following examples the amounts of service charges and the prices per 1,000 gallons are assumed for this discussion only, and from what has been said above, it should not be inferred that the figures are as recommended by the Associations.

Example No. 1

A town with a population of 1,500; 250 active taps (six persons per tap); supply from a 10-inch well, 300 feet deep; a deep-well pump, motor-driven, capacity 60 gallons per minute, delivering supply directly to an elevated tank about 100 feet high, having a capacity of 50,000 gallons. It is further assumed that there are no consumers using as much as 750,000 gallons per quarter (8,333 gallons daily), or, in other words, that none of the water furnished comes under the classification for manufacturing purposes as given in the rate schedule. The conditions above described apply to many towns of this size. Usually a deep well located in or near the town is the cheapest and best supply available until such time as more water than the well will furnish is required.

The number of active taps includes stores and other taps in addition to residences. In the cities and towns 100 per cent served, the number of persons per tap is usually about five and often as low as four. Hence the figure 250 taps makes allowance for some houses which may not be served for a number of years.

The service charges are figures to cover the maintenance of services and meters, both of which should be installed and owned by the town. These allow for a depreciation of about 10 per cent yearly and in addition cover the cost of meter reading, billing and also for a certain amount of water which will slip by unregistered. For the larger meters the charges take into account, to some extent, the larger sizes of pipe lines necessary to supply the full capacity of meter at any moment.

In the example given the number of meters and charges will be as follows:

Size of Meter	Number of Meters	Charge per Quarter	Total Amount per Quarter
⅝-inch	240	$1.50	$360.00
¾ "	6	2.25	13.50
1 "	2	3.00	6.00
1½ "	1	4.50	4.50
2 "	1	7.50	7.50
Total	250		$391.50
Total per year from service charges			$1,566.00

NOTE.—Service charges per quarter for larger meters as follows: 3-inch = $15; 4-inch = $22.50; 6-inch = $45.

The third and remaining source of revenue is from the sale of water. For all water delivered in addition to the service charge there shall be a charge for all water delivered as follows:

Domestic—First 75,000 gallons per quarter @ 35c per 1,000 gallons
Intermediate—Next 675,000 gallons per quarter @ 25c per 1,000 gallons
Manufacturing—All over 750,000 gallons per quarter @ 18c per 1,000 gallons

Based on averages for a number of towns of similar size, the quantity of water actually paid for may be estimated as follows: 241 meters will show an average of 9,100 gallons each per quarter, making a total of 2,193 thousand gallons classed as domestic, and 9 meters will show an average of 136,500 gallons per quarter (1,500 gallons daily), making a total of 1,230 gallons as coming in the intermediate class. Of this latter (75,000 x 9) 675 thousand gallons must be paid for at the domestic rate of 35 cents. The following table shows this more clearly:

Number of Meters	Total per Quarter 1,000 gallons	Classified for Payment—Domestic	Classified for Payment—Intermediate
241	2,193	2,193	
9	1,230	675	555
Total 250	3,423	2,868	555

2,868 thousand gallons @ 35c	$1,003.80
555 thousand gallons @ 25c	138.75
Total revenue per quarter	$1,142.55
Total revenue per year	$4,570.20

It should be noted that the average daily quantity of water sold is about 38,000 gallons, or 25 gallons per capita. Assuming 75 per cent is accounted for, the daily pumpage will be about 50,000 gallons, or 33 gallons per person.

SUMMARY OF REVENUES FOR YEAR

For fire protection (general tax fund)	$2,250.00
Service charges	1,566.00
Sale of water	4,570.20
Total	$8,386.20

In the above estimate about 60 per cent of the domestic consumers will use less than 10,000 gallons per quarter, making a yearly bill for water, including the service charge, of $20 and less for 150 of the consumers.

Will the above cover the operating expenses, interest and sinking fund and what amount may be invested in the works, are the next questions which must be answered.

The operating expenses of the entire water-works system per month will be about as follows:

Electric power @ 5c. per kw. hr.		$110.00
Superintendence		150.00
Extra labor, supplies and expenses		50.00
Total		$310.00
Total per year	$3,720.00	
Allowance for depreciation	580.00	
Total operating expenses per year		$4,300.00

The balance of the yearly revenue which may be invested in the plant is $4,086.20 ($8,386.20 — $4,300). Since the interest and sinking fund requirements would be 7½ per cent, bonds to the amount of $55,000 may be issued.

Whether the $31,500 will be sufficient to construct the entire distributing system depends on the local conditions. At least it will provide enough pipe to reach the majority of the consumers. And then there is always a chance of an industrial consumer's increasing the revenue, which will make extensions possible from time to time.

Most towns of 1,500 have at least one consumer which will use as much as 750,000 gallons per quarter (8,333 gallons per day) and some have several. Tanneries, creameries and ice plants, woolen mills and many other industries require large quantities of water. Sometimes a railroad company will use from 15,000 to 50,000 gallons per day.

The first cost of the investment will be about as follows:

Land, engineering, supervision of construction and other preliminary expenses	$12,000.00
Well at $7.50 per foot	2,400.00
Pump house and pump	2,800.00
Elevated tank	5,500.00
Pipe and connections	800.00
	$23,500.00
Remaining for distribution system	31,500.00
Total cost	$55,000.00

Example No. 2

Town of 1,500 with 253 active taps. Three additional meters are:
One 3-inch averaging 10,000 gallons per day
Two 4-inch each 20,000 gallons per day
Total water classed as manufacturing, 50,000 gallons per day

The service charges and charges per 1,000 gallons are assumed the same as in Example No. 1, service charges of $60 per year and $90 per year being placed on the 3- and 4-inch meters respectively.

In this example it is also assumed that the only supply available is from a near-by river or creek and that the water must be filtered and chlorinated and then pumped to an elevated tank of 75,000 gallons capacity, or a concrete reservoir of somewhat greater capacity located on a hill in the town. The filter plant will have a capacity of about 500,000 gallons per 24 hours with motor-driven centrifugal pumps 350 gallons per minute each and a total head, including the low-lift pumps, of 175 feet.

The revenues will be as follows:

By Sale of Water (Quantities in Thousand Gallons)

	Number of Meters	Total per Quarter	Classified for Payment — Domestic	Intermediate	Manufacturing
Domestic	241	2,193	2,193		
Intermediate	9	1,230	675	555	
Manufacturing	3	4,500	225	2,025	2,250
Total	253	7,923	3,093	2,580	2,250
		Per cent	39.05	32.55	28.40

3,093 thousand gallons	@ 35c	$1,082.50
2,580 thousand gallons	@ 25c	645.00
2,250 thousand gallons	@ 18c	405.00
Total per quarter		$2,132.50

Summary of Revenue for Year

By sale of water	$8,530.00
From service charges	1,926.00
Fire protection (general taxes)	2,250.00
Total	$12,706.00

Note.—7,923 thousand gallons per quarter = 88,000 gallons per day = 59 gallons per capita daily.
Total per day assuming 75 per cent accounted for = 120,000 gallons.

The yearly operating expenses should be estimated first so as to find out what portion of the revenue will remain for interest and sinking fund:

Operating Expenses, Entire Works

Electric power 3,500 kw. hrs. @ 4 cents		$140.00
Superintendence		150.00
Chemicals		20.00
Extra labor		60.00
Supplies and expenses		50.00
		$420.00
Total for the year	$5,040.00	
Allowance for depreciation	860.00	
Total operating expenses for year		$5,900.00
Balance for interest and sinking fund		6,806.00
Bond issue $90,000 × 7½ per cent		6,750.00

Estimated Cost of Water-Works

Land and engineering (with supervision)	$10,000.00
Filter plant and force main	40,000.00
Elevated tank or concrete reservoir	7,500.00
	$57,500.00
Amount remaining for distribution system	32,500.00
Total cost of works	$90,000.00

If by chance the filter plant is combined with an electric or other power-plant in charge of one superintendent, the monthly operating expenses might be less than are given in the table. In a small town such an arrangement is very common.

Example No. 3

Town of 1,500 population with 253 active taps and same quantities of water sold as in Example No. 2. In this case suppose the supply is brought by gravity through an 8-inch pipe line from a spring about three miles distant and delivered into a covered concrete reservoir on a hill in or near the town; also that it is treated with liquid chlorine.

The yearly revenue is $12,706 as in Example No. 2. The next step is to estimate the operating expenses in order to determine how much can be invested in the plant:

Total operating expenses per year..... $4,800.00

Estimated Operating Expenses Per Year	
Superintendent (part time)	$1,000.00
Chlorination repairs and expenses	150.00
Extra labor for maintenance of system	600.00
Supplies and expenses	500.00
Total	$2,250.00
Allowance for depreciation	1,250.00
Total operating expenses for year	$3,500.00

This leaves a balance of $9,206 for interest and sinking fund. $120,000 × 7½ per cent equals $9,000.00 per year.

Estimated Cost of Water-Works	
Engineering and supervision and rights of way	$12,000.00
Cost of rights for spring	10,000.00
Pipe line (3 miles of 8-inch cast iron)	35,000.00
Service reservoir	10,000.00
	$67,000.00
Remaining for distribution system	53,000.00
Total cost of water-works	$120,000.00

Example No. 4

Knowing the actual cost of the water-works and the operating expenses, also the quantities of water furnished for domestic, intermediate and manufacturing purposes, how can the rates for water be calculated?

It will be assumed that the annual revenues for fire protection and service charges are as given in Example No. 3 and that the quantities of water for domestic, intermediate and manufacturing purposes have been found from meter readings to be the same as in Example No. 3.

Suppose that the cost of the water-works system complete is $90,000 and the operating expenses (including an allowance for depreciation) are $3,000.

The total yearly charges will then be:

Interest and sinking fund (90,000 × 7½ per cent		$6,750.00
Total operating charges		3,000.00
Total per year		$9,750.00
Part of this is derived by:		
Fire protection	$2,250.00	
Service charges	1,926.00	$4,176.00
Balance for year from sale of water		$5,574.00
Per quarter		$1,394.00

Since the total quantity of water per quarter for all purposes is known to be 7,923 thousand gallons, the average cost is $1,394 ÷ 7,923 = 17.6 cents per 1,000 gallons.

The tabular form of computing the prices per 1,000 gallons, after assuming the ratios between domestic, intermediate and manufacturing uses, is given in "Meter Rates for Water-Works," by Allen Hazen, page 176:

Class	*Total Quantity per Quarter	*Per Cent of Total	Relative Ratio	Product
Domestic	3,093	39.05	2.00	78.10
Intermediate	2,580	32.55	1.46(2)	47.52
Manufacturing	2,250	28.40	1.00	28.40
	7,923	100.00		154.02

Class	Ratio of Required Rate to Average Rate	Required Rate Average being 17.59o
Manufacturing	1.298(3)	22.9 cents
Domestic	0.948(2)	16.7
Intermediate	0.640(4)	11.4

* As classified for payment (See table in Example No. 2)

(1) One-half way between mean proportional of domestic and manufacturing rates

(2) = 2.00 (3) = 1.46 (4) = 1.00

1.54 1.54 1.54

To be on the safe side and to use even figures, the charges will be fixed at 23 cents, 17 cents and 12 cents respectively. Then referring back to the quantities of water as classified for payment in Example No. 2:

3,093 thousand gallons @ 23 cents		$711.00
2,580 thousand gallons @ 17 cents		439.00
2,250 thousand gallons @ 12 cents		270.00
Per quarter		1,420.00
Per year		$5,680.00

Summary and Remarks

The relative rate per 1,000 gallons of water for manufacturing and domestic purposes should not exceed a ratio of 1: 2, as recommended in the report adopted by the American Water Works Association.

Attention is called to the allowance of about 1 per cent of the cost of the water-works and included in the yearly operating expenses. This is in addition to the sinking fund depreciation included in the fixed charges. This extra amount should be set aside so as to earn the equivalent to compound interest but so held that any part of the accrued amount will be available for replacement of pumps or other major units as required. It is also proper to use part of the fund, so set aside, for new extensions. If the water-works is self-sustaining, as it should be, the funds so invested in new extensions will earn the 7½ per cent required for interest and sinking fund charges.

If the rate schedule adopted when the system is new brings in sufficient revenue to meet fixed charges and operating expenses, the same rates will probably result in an annual surplus after a number of years (a) because of the natural growth of small towns (about 25 per cent in every ten years), and (b) the increased quantities of water sold for industrial purposes. In some cases the annual surplus may be sufficient to finance such extensions of plant as will be needed. In the long run this method of financing additions to fixed capital, the "pay as you go" plan, as it is sometimes spoken of, is cheaper than adjusting the rates

from time to time, with the object of keeping the annual revenue sufficient only to meet the fixed charges and operating expenses, and then issuing bonds each time extensions are made.

The water-works accounts should be kept separate from accounts for other utilities and departments and none of the surplus should be used to carry other utilities and departments, as is often done in some places. The form for uniform accounting adopted by the New England Water Works Association (*Journal*, March, 1921), has condensed statement forms applicable for the smaller plants and also more detailed statements for large water-works systems.

A considerable part of the discussion has been devoted to the question of rates for the reason that this is the most important phase of any financial program. Whether or not sufficient income may be obtained at rates which are within reason to make the water-works self-sustaining depends a great deal on local conditions which influence the first cost of the plant. The examples given are typical for many places with populations of 1,500, and it is believed that the average figures for quantities of water sold and the estimated costs are conservative.

Model City Featured at Auto Show by St. Louis Safety Council

AT the 1924 Automobile Show in St. Louis a unique feature was a model city with miniature safety signs and signals, exhibited by the St. Louis Safety Council. These traffic-regulating devices were typical of those used in the streets of St. Louis, which include:

"Quiet Zone" signs, near hospitals

"Playground" signs, adjacent to playgrounds

"School, Drive Slow" signs, placed in the center of streets near all school buildings

"No Parking" signs, where parking is to be eliminated in the entire block. "No Parking" signs, where business houses have 30 feet reserved for the loading and unloading of merchandise

"Safety Zone" signs, which accommodate the public in boarding street cars

"Slow—Hazard" signs at dangerous intersections to warn motorists

"Stop" signs, where a great hazard exists and where it is necessary to stop even when the intersecting street is not a boulevard

"Stop" signs at fire-engine houses, requiring all street cars to stop before proceeding by these houses

Automatic Redflex signals, placed at dead-end streets

Automatic traffic policemen, which regulate the movement of traffic at certain intersections

"Boulevard—Stop" signs, which are placed at all boulevard intersections, requiring motorists to stop

These signs, as used in the streets of the city, are made and erected, with two exceptions, by the Department of Streets and Sewers of St. Louis.

Automobile Fatality Chart 1918 to 1923
CHAUFFEURS TRAFFIC SCHOOL
Central High School
Free Auditorium
ST. LOUIS SAFETY COUNCIL
A STUDY IN TRAFFIC
SAFETY SIGNS & SIGNALS
AS USED IN THE CITY OF ST. LOUIS

A MODEL CITY WITH SAFETY SIGNS AND SIGNALS AS USED IN ST. LOUIS

The automatic traffic policemen, which regulate the movement of traffic, are manufactured by Klug & Smith Automatic Controlling Device Company, of Milwaukee, Wis.

The playground signs and safety zone signs are donated by the Automobile Club of Missouri. A new type of "Boulevard—Stop" sign is being planned which will be furnished by the St. Louis Auto Club.

The "School Zone" signs are supplied by the Board of Education.

A Study of Filter Sand for Municipal Water-Supplies

By W. M. Weigel
Mineral Technologist, Bureau of Mines, Washington, D. C.

THE use of sand for the filtration of municipal water-supplies is of comparatively recent use in this country, although at the present time most cities of any size that draw their water-supplies from surface sources use sand filters in their purification systems. Not only are sand filters employed to remove sediment and suspended matter, but they also take out most of the bacteria in the water.

The first comprehensive research and study of sand for this purpose was probably that of Hazen for the Massachusetts Board of Health in 1891 and 1892,* although sand filters had been employed for a considerable time before. Specifications for filter sand drawn since then have been largely based on the results of Hazen's work.

Requirements

The general requirements for filter sand are more exacting than for any of the other kinds of sands, except the chemical specifications for glass sand. Filter sand must be uniform in size and within certain limiting sizes. In addition, it must be clean and free from clay and organic matter and of fairly high purity. Early investigations established the fact that an excess of fine material increased the friction and decreased the rate of flow through the filter, and that the size of the finer particles, rather than the coarser, determined the effective size; also, that large grains tended to cause irregularities in flow in different parts of the bed. There is no requirement as to grain shapes, except that they be not flat or elongated, since, so far as known, either rounded or angular grains are equally efficient.

Based on Hazen's investigations, two factors are quite generally used to control the average size and uniformity of size of the sand. These are defined as follows: The "effective size" of a sand is such that 10 per cent by weight of the sand is finer than this size, and 90 per cent is coarser. It is expressed in millimeters. The "uniformity coefficient" is defined as the ratio of the size of grain which has 60 per cent finer than this size to the size which has 10 per cent finer (the "effective size"). It is evident that the smaller this coefficient, the more uniform is the sand. If all the grains were exactly the same size, the coefficient would be 1.

The ordinary method of determining the effective size and uniformity coefficient is to make a screen analysis of the dry sand. The cumulative percentages are then plotted against the size of the screen openings. The intersection of the curve with the 90 per cent line gives the effective size, that is, 10 per cent is finer than this. The size corresponding to the 40 per cent value (60 per cent is finer than this), is read from the plot and this divided by the effective size gives the uniformity coefficient. The use of coordinate paper, in which percentages are laid off on the vertical axis numerically and the logarithms of the sizes of screen openings along the horizontal, makes a convenient form. Printed blank forms ruled in this way may be obtained from the manufacturers of testing sieves. This method, in reality, represents the size of opening through which the grains will pass, or on which they are retained, rather than the actual grain size. Before accurate screens were obtainable, it was customary to determine the size of grains passing a given screen by collecting the last grains passing and then by counting a known weight of these and their specific gravity being known, their diameters assumed as spheres could be calculated.

Specifications usually state, in addition, that no grains shall be larger than a certain mesh and also limit the percentage of very fine material, or that which will pass a 100-mesh sieve, as during the washing with counter-current flow, the fines collect in the top part of the sand bed and clog the filter.

Sands with effective sizes of 0.20 to 0.70 mm. are used, but those most commonly specified have effective sizes from 0.40 to 0.55 mm. The uniformity coefficient varies from 1.25 to 1.80 with 1.55 to 1.60 as an average.

The following table gives the effective size and uniformity coefficient of samples supplied by some regular producers of filter sand.

* Report of Massachusetts Board of Health, 1892, p. 541.

Tyler standard testing sieves were used in making the analyses:

Sample No.	Source	Effective Size	Uniformity Coefficient
322	New Jersey	0.43	1.40
328	New Jersey	0.38	1.42
329	New Jersey	0.60	1.33
337	New Jersey	0.41	1.39
338	North Carolina	0.38	1.67
345	Illinois	0.42	1.26
348	Minnesota	0.33	1.60
349	Minnesota	0.44	1.52
350	Minnesota	0.37	1.55

Chemical Analysis

A good filter sand requires a rather high silica content. It is generally specified that not more than 2 per cent shall be soluble in hot dilute hydrochloric acid. Other specifications state that the combined brine and magnesia calculated as carbonates shall not exceed 2 per cent. Aside from this, the chemical composition is usually not specified.

Specifications for Filter Sand

Some condensed specifications are as follows:

Water Department, Baltimore, Md., Filtration Division, Contract No. 22:

The sand shall be composed of hard and durable grains, either sharp or rounded, substantially free from clay, loam, dust or other foreign matter and flat particles.

When crushed and powdered and digested for 24 hours in strong, warm, hydrochloric acid, without stirring, at least 95 per cent shall remain insoluble. The sand shall not contain more than 2 per cent of calcium and magnesium taken together and calculated as carbonate.

The stock sand furnished shall have an effective size of not less than 0.33 mm. and a uniformity coefficient of about 1.75. At least 90 per cent shall be finer than 2 mm. After being placed and washed (as specified) and the fine sand on top scraped off and removed and the sand rewashed, the top two inches shall have an effective size between 0.40 and 0.50 mm. and not more than 1 per cent shall be finer than 0.25 mm. The diameters of the sand grains shall be computed as the diameters of spheres of equal volumes and all percentages shall be calculated by weight.

In a private communication, May, 1924, the Baltimore Water Department states that with new work they would use a little coarser sand, and expect in that way to get better.

Washington, D. C.:

Sand shall be clean river, beach, or bank sand, either sharp or rounded, entirely free from clay, dust or organic impurities.

Not more than 0.5 per cent shall be less than 0.13 mm.; not more than 8 per cent less than 0.26 mm. At least 7 per cent shall be less than 0.34 mm.; at least 70 per cent less than 0.83; at least 90 per cent less than 2.1 mm. No particle shall be less than 5 mm. diameter. The sand shall not contain more than 2 per cent of lime and magnesia calculated as carbonate.

Springfield, Mass., and Toronto, Ont.:

The general specifications are the same as those for Washington. Size limits are as follows: The effective size shall not be less than 0.25 mm. nor more than 0.35 mm. The uniformity coefficient shall not be less than 3.0. The sand shall be free from dust and shall not contain more than 1 per cent finer than 0.13 mm. and entirely free from all particles over 5 mm.

A Missouri plant prepares its sand to the following specifications: Effective size not less than 0.40 nor more than 0.50 mm. and uniformity coefficient not greater than 1.65. Not more than 0.25 per cent shall be finer than 0.25 mm. At least 95 per cent shall be finer than 1.2 mm.

Sources of Supply

Compared with building sand, the production of filter sand is small and requires more careful preparation and extensive plant. A much better price is obtained than for the ordinary grades of sand, and, in consequence, the points of production are more widely scattered and the sand is sometimes shipped long distances.

The chief producers are in New Jersey, North Carolina, Illinois, Minnesota and Missouri, but any good sand bed can produce suitable filter sand, if it can be washed clean and if it contains enough grains of the required size to warrant their separation from the rest of the sand. Where the coarser grades of sand-blast sand are produced, the finer material is often prepared for filter sand. Also, the finer grades of sand-blast sand† may be used for filter sand if prepared with proper uniformity.

Methods of Mining

Filter sand may be prepared from ocean beaches, lake deposits, river bars, sand banks and soft sandstone, and the method of excavation depends largely on the nature of the deposit.

Where beach sand is used, the excavation is above high tide, so floating dredges are not feasible. Also, the area excavated usually has considerable horizontal extent so that excavating machines are best mounted on railroad track paralleling the direction of the beach. Locomotive cranes with clam-shell buckets make about the most efficient equipment; they have a wide reach and are more suited to the comparatively shallow excavations than steam shovels. The sand is conveyed to the washing and screening plant, preferably in side-dump cars drawn by steam or gasoline locomotive.

Sand in lake shores and bottoms and river bars is commonly excavated with dredging pumps mounted on barges, which are very mobile and efficient units. Sand can be pumped from any desired part of the bed, and enough water is at the same time pumped for washing or at least most of the washing. The mixture of sand and water is also conveyed to the

† Weigel, W. M., Sand-blast Sand, Serial 2615, Bureau of Mines, June, 1923.

plant through pipe lines in the same operation, within reasonable distances, and the action of the pump impellers tends to break up any clay lumps and facilitate washing. If the sand is to be conveyed some distance in cars, clam-shell dredges standing on the bank of the lake and loading into cars alongside are sometimes used, as the power cost is less than for a dredge pump.

When an artificial pond can be maintained, floating dredges are often the most efficient means of excavating the sand from what would otherwise be dry banks. If stripping of overburden is necessary, it is done by hand, scrapers, or steam shovel and the overburden hauled away in wagons or motor trucks. Sometimes the overburden is back-filled into the excavation. The floating dredges have steam, electric or oil engines, depending on which form of power is cheapest and best suited to the conditions.

Dry sand banks are mined with steam shovels if the plant capacity is sufficient to warrant their use, otherwise the cars or wagons are loaded by hand. Practically all regular producers of filter sand, however, have operations large enough to warrant the use of mechanical excavators.

Soft, friable sandstone constitutes most of the source of filter sand in the Mississippi Valley district. This sand is characterized by uniformly rounded grains, in this way differing from the angular to irregular-surfaced grains from lakes and banks. Some river sand also is mined in this territory.‡

Preparation

Preparation of filter sand involves washing or screening and usually a combination of both. Very few sands are clean enough without washing. These processes have been outlined in the report on sand-blast sand mentioned above, as some firms produce both sand-blast and filter sand from the same bed or bank.

For filter sand the specification as to size and uniformity is rigid, so that careful screening or sizing is essential. In some instances, the sand is rescreened to insure the removal of fines.

Sizing by screens is almost universal, but where an ample water-supply is available, it would seem that hydraulic classification should give a suitable product, as all grains are of the same specific gravity and roughly of the same shape. It is admitted that more careful supervision would be needed than in sizing by screens, but that should be more than offset by lower first cost or greater capacity, and the washing and sizing would be performed in one operation. The sand originally used for the Washington, D. C., filtration plant was prepared by combined screening and hydraulic classification.§

The sand bank used contained considerable clay in the form of lumps and seams that could not be rejected in mining, making removal of the clay necessary. The sand from the bank was first dumped through a coarse grating to remove the larger clay lumps. This was followed by a revolving screen with 2-inch openings. The sand then passed through a revolving screen with 4-mm. openings in which jets of water played. The water and solids passing through this screen flowed to pug mills, which broke up and pulverized the remaining clay lumps. An excess of water here overflowed and removed a good portion of the clay. The sand was drawn out near the bottom. The pug mill was followed by the washers, which were long boxes with sloping bottoms, the feed entering at the shallow end. Water-supply pipes near the bottom had perforations pointing downward. The overflow of clay and water was removed by a central trough. The sand, after being separated from the clay by the combined horizontal and upward currents of water, was drawn off at the bottom of the deeper end of the washer. The capacity was stated to be about 1 cubic yard per hour per square foot of box area.

Shipment and Prices

Shipment is usually made in carload lots in box cars. Considerable business is, however, done in less than carloads to small filtration plants to make up losses due to rewashing of the filters. In this case, the sand is shipped in bags.

Prices vary widely. In small lots in bags, prices of $10 to $12 per ton, f. o. b. shipping point, have been recently quoted. In car lots in bulk, the price range is from $4 to $8 per ton, f. o. b. shipping point, depending on location and degree of rigidity of specifications.

‡ Dake, C. L., Sand and Gravel Resources of Missouri, Missouri Bureau of Geology and Mines, Vol. XV, 2nd Series, p. 78.

§ Hazen, Allen, and Hardy, E. D., Water Filtration at Washington, D. C., Trans. Am. Soc. Civil Eng., Vol. LVII, p. 326.

QUARANTINE FOR VENEREAL DISEASES UPHELD

The Commissioner of Health of Akron, Ohio, placed two venereally infected women under quarantine pursuant to authority contained in regulations adopted by the Public Health Council of the State Department of Health. In habeas corpus proceedings brought by the two women, the Supreme Court of Ohio held the regulations not to be violative of either the federal or the state constitution, but held them to be a proper exercise of the police power of the state.—Public Health Reports.

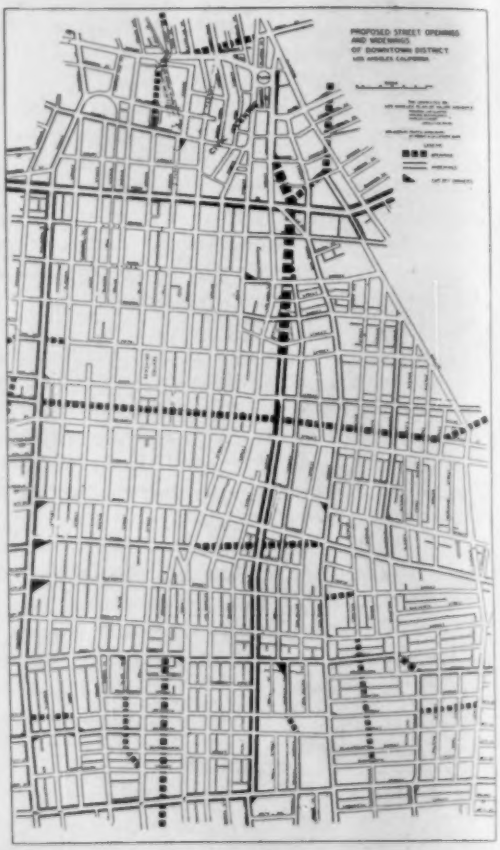
Los Angeles Making Scientific Study to Relieve Traffic Congestion

By Clarence R. Snethen
Los Angeles Traffic Commission

TRAFFIC experts usually concede that the traffic congestion in Los Angeles is the worst in the United States. A recent traffic check showed one street intersection—Figueroa and Santa Barbara—with a total of 40,222 autos crossing during 12 hours. There are at least twenty other corners in the city all having in excess of 30,000 cars for the same period.

The down-town business district has probably the least street area proportionately of any of the larger American cities, and is congested almost to the saturation point. These facts have been realized locally for some time. A little over two years ago the business interests and civic groups of the city organized the Traffic Commission of the City and County of Los Angeles to study the traffic situation and make recommendations for its relief.

This organization has employed a staff of trained, technical men who have devoted their entire time to the scientific study of this city's intricate traffic problem. Their work has naturally been divided into three fields—public transportation, street development, and traffic regulations.



PROPOSED STREET OPENINGS AND WIDENINGS OF DOWN-TOWN DISTRICT, LOS ANGELES
(From report on "A Major Traffic Street Plan for Los Angeles, published July, 1924)

SECOND STREET, LOS ANGELES, LOOKING EAST FROM NEW TUNNEL NEARING COMPLETION
This narrow street is to be widened by arcading sidewalks under buildings

At the instance of the Traffic Commission the City Council recently retained Major R. J. Kelker of Chicago to make a survey of the transportation situation. He is now engaged in studying the transportation needs of the entire city and county, and his report outlining a rapid transit system will be ready the latter part of this year.

The Traffic Commission itself retained three of America's leading city planners—Frederick Law Olmsted of New York City, Harland

Bartholomew of St. Louis, and Charles H. Cheney of Los Angeles—to design a traffic street system. They have been studying the present streets and proposed improvements, and their report was published in July.

Upon the recommendation of the Traffic Commission, the City Council appropriated $10,000 to make a survey of the parking problem. This survey was made by a committee composed of representatives of the various business groups of the city. They recommended the complete elimination of parking on four north-and-south streets, and six east-and-west streets in the congested district, and established thirty-minute parking throughout the remainder of this district. As this article is written, their recommendations are being enacted into ordinances.

The Traffic Commission has retained Miller McClintock, of the Municipal Research Bureau of Harvard University, to make a study of the local traffic regulations and draft a model set of traffic laws which will be presented to the Council in September.

It has been felt that only by scientific study could any real solution be reached, and the Traffic Commission believes that with the completion of these various surveys it can enlist the support of the entire city in getting the recommendations adopted and put into effect.

Traffic Counts by Boy Scouts in Los Angeles

By Philip P. Sharples

TRAFFIC congestion, traffic accidents and traffic annoyances in Los Angeles have forced to the fore all schemes for traffic relief. Messrs. Bartholomew, Cheney and Olmsted were asked by a committee of Los Angeles citizens, the Committee on Los Angeles Plan of Major Highways, a sub-committee of the Los Angeles Traffic Commission, to make a study of the plans already presented and make recommendations for relief.

A parking survey count made by paid workers showed 200,584 vehicles entering the business district of Los Angeles between 7 A. M. and 6 P. M., and 176,301 leaving; the balance being the numbers of vehicles still left in the business district at 6 P. M. minus the equivalent already there at 7 A. M. A count outside of this district was necessary to show the direction and volume of traffic at outlying points, in order to indicate the point or points at which traffic relief was most urgent.

Paving and topography cause the street traffic in Los Angeles to follow very definite routes, and it was possible to pick out a reasonable number of stations which, in addition to the cordon count around the business district made by the Parking Survey Board, would give a very comprehensive idea of the traffic movement in and about the city.

Various agencies were considered for making this count. Owing to the limited funds available for the work, volunteer workers were considered essential. The Boy Scouts were chosen on the ground that they had the proper kind of discipline, that they were drawn from every part of the city, and that they were greatly interested in civic matters. E. B. DeGroot, the Scout Executive for Los

TWO OF THE SCOUTS AT WORK

LOS ANGELES TRAFFIC COMMISSION Feb. 14, 1924

Station on _____ Street

For traffic going _____ (N. S. E. or W.)

Towards _____ Street

Name of Observer _____ Troop No. _____

(Show time in even 15 minutes in left column.)

TIME	PASSENGER AUTOMOBILES			TRUCKS AND BUSSES		
	Through	Left	Right	Through	Left	Right

CARD USED BY BOY SCOUTS

Angeles, gave his hearty support to the idea, and to his enthusiasm and power of kindling a response in his organization is largely due the success of the count. A. G. Seiler, Field Executive, had charge of the details.

The count was taken on Thursday, February 14, 1924, from 7 A. M. to 6.30 P. M. There is no virtue in the day, but preliminary studies had indicated that Thursday was the most nearly average traffic day of the week. The time of year is faulty in that daylight ceases at five-thirty, but it was imperative to have the results at as early a date as possible.

The whole city is interested in the traffic problem. For a population of a million in the city, there are at least 273,000 automobiles, while for the county with a population of a million and a half, there were 430,000 for the year 1923. It was not difficult at a dinner for the Boy Scout Masters, held at the Y. M. C. A., to sell them the idea of the count. Volunteers were asked for the count and every one present signed up, giving his name, his address, the Boy Scout troop headquarters and the number of scouts that could be counted on in his own troop. One hundred and twenty-five masters were on record with an average of ten boys from each of those troops.

The School Board was next interested in the count and proved as enthusiastic as the Scout organization. The Scouts were promised a day's leave of absence from school with a record of attendance, if they were reported by the Scout organization to be on duty on the count day. The permission of a parent or guardian to take part in the count was also required, and the Scout was required to report the permission to his school teacher the day before and get leave of absence for the count day. This scheme placed the responsibility for taking part in the work directly on the parent and obviated any cause for complaints. The parents and school teachers almost as a unit displayed hearty civic cooperation.

In the meantime, directions for taking the count had been prepared and printed, cards for taking the count made, badges provided and pencils cut into convenient lengths. Enough supplies for a corner were assembled in a stout manila envelope, together with a directed envelope for returning the cards to Scout Headquarters. Each Scout had a badge, a pencil, a copy of the directions and the leader took charge of the supply of cards and was, in fact, in command of that particular corner to which he was assigned. Each leader was required to have a watch.

Talks were given to the boys about the way of taking the count, time having previously been given them to study the directions. A large wall chart had been prepared to show the diagram of a corner and the possible variations from a four-way corner. Special diagrams had been prepared for places where the count was to be made on a straight-away stretch or on a three-way, five-way or six-way corner.

The boys, averaging about eleven years of age, showed a keen grasp of the directions and called for the elucidation of many points not apparent on a first reading of the directions. Boys asked what to do about counting taxicabs, asked whether a commercial number plate should be considered a truck, and asked how a car turning the corner and returning on the same street should be reckoned.

The morning of the count dawned clear and warm. The Scout office was open before daylight and calls began to come in at once. Some squads reported that their crews were not full or that boys could only give part time. All Scouts not otherwise assigned had been asked to report to headquarters, and by 7 o'clock a hundred reserve scouts were waiting. All deficiencies were filled by dispatching Scouts by car-line or auto. A systematic inspection was made by the headquarters staff of all sta-

tions twice during the day. The inspectors carried extra cards, extra printed directions and extra Scouts.

An examination of the cards naturally showed a great variation in workmanship. Few had failed to make their records clear and those that were obscure were cleared up by a study of the corner and the cards. Only two or three corners were rejected entirely as too incomplete to use.

As a check on the accuracy of the count, adjacent corners were carefully compared and in case of any discrepancy the cards were carefully gone over. In this way mistakes in sorting and tabulating were in several cases detected and the boys' work proved to be correct.

The tabulation was done on large sheets, with a ruling for each fifteen minutes during the counting time and vertical columns for each of the four stations and for passenger automobiles and trucks separately. This made a total of twenty-four columns for a standard corner.

The columns were totaled separately and the traffic in every direction from the corner for both trucks and passenger automobiles was figured separately. Cross footings gave the number of vehicles passing a station on the same side of the street and vertical footings gave the total vehicles passing on the opposite side of the street. The sum of the two gave the total traffic flow on the street and was entered on the traffic flow map. This map was constructed by plotting the corner counts as a cross on a map of the city drawn to a scale of 1,600 feet to the inch. Each arm of the cross was made a width to correspond to the traffic flow, allowing 50,000 vehicles to the inch in width. The adjacent corners were connected. The resulting diagram showed clearly the concentration points of traffic and indicated where relief was necessary to provide for abnormal flow, either by diverting into other channels or by widening and straightening existing streets.

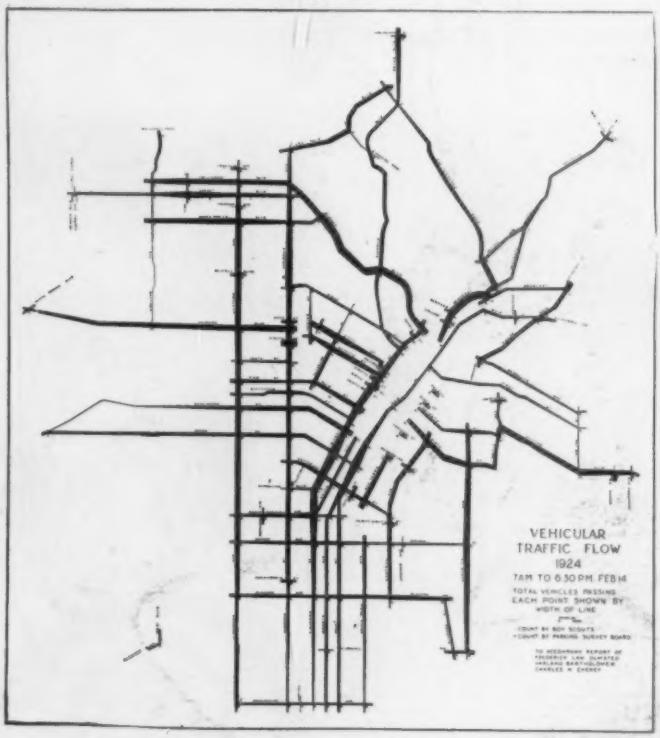
The traffic flow map must needs be studied with a thorough understanding of street paving widths. The heaviest traffic flow is not always where it would naturally be, but where it is forced by street widths, by street-car routes, by sub-business centers and other factors that reduce effective traffic width. As Prof. Arthur E. Johnson has so well pointed out in his studies on traffic capacities of the Baltimore-Washington road, an uninterrupted flow can pass one thousand vehicles per hour on each line of traffic and this number, owing to wider spacing, varying roughly as the square of the velocity, does not change within rather wide limits of speed.

The limiting capacity of streets lies largely in the interruptions to traffic flow. The traffic flow map shows the points where it is most necessary to study the interruptions and to provide for traffic control.

The data collected do not furnish a complete traffic survey, as it was thought inexpedient to burden the Boy Scouts with more than a rough classification of trucks and passenger cars. The ratio between trucks and passenger cars is about 1 to 10.

The cost of the count was substantially as follows: No cost of overhead or supervision is included, as these costs were absorbed either by the Boy Scout Headquarters or the Consulting Board general office expense.

Printing	$80.00
Boys' allowance @ 50c	450.00



TRAFFIC MAP BASED ON COUNTS BY THE BOY SCOUTS AND THE PARKING SURVEY BOARD

Dinner and luncheon	220.00
Tabulating	428.00
Taxies and autos	75.00
	$1,253.00

The count has proved of inestimable value in the studies of the Consulting Board. Without it, the direction and volume of traffic would have been with difficulty realized. The accuracy and dependability of the work of the Boy Scouts have reflected great credit on the boys and their training.

ACKNOWLEDGMENT.—The foregoing statement is elaborated from a report on "A Major Traffic Street Plan for Los Angeles," published July, 1924, and listed on page 275 of this issue of THE AMERICAN CITY. We are indebted to Mr. Sharples for the additional data and for the accompanying illustrations, two of which do not appear in the published report.

Down-Town Traffic Regulations

Some Rules and Improvements Which Have Helped to Reduce Congestion in the Down-Town Streets of Los Angeles

By Cleveland Heath

Captain, Traffic Division, Los Angeles Police Department

1. Parking is prohibited in certain streets from 4:00 to 6:15 p. m., and we favor a similar provision from 7:00 to 11:00 a. m.

2. We have eliminated left turns at twelve of our busiest intersections from 9:00 a. m. to 6:15 p. m.

3. Loading zones have been created in each block for the use of commercial vehicles.

4. No vehicle is allowed to back to the curb from 9:00 a. m. until 6:15 p. m.

5. All vehicles must park with right wheels within one foot of the curb.

6. Alleys are restricted to one-way travel and no parking, except while actually loading and unloading.

7. Parking is prohibited in front of theaters, hospitals, hotels, police stations, fire-houses post-offices, sidewalk elevators, private driveways, and street-car loading zones.

8. We have a 45-minute parking limit from 7:00 a. m. to 6:15 p. m.

9. We have a synchronized traffic signal on thirty-one corners, which is operating successfully. These signals are a combination of semaphore, lights, and bells, and are controlled from one station. They are very flexible, and the intervals may be made to suit almost any condition; they may be operated manually, or any part of the system may be cut out. We are contemplating eliminating the lights during the day and the semaphores at night. The signals are in use from 7:00 a. m. to 9:00 p. m. The cost of operation is small. They are manufactured by the Acme Traffic Signal Co. of Los Angeles.

SYNCHRONIZED TRAFFIC SIGNALS

10. We are also getting relief through the city's program of opening and widening streets. Within the past few months, Fifth Street has been cut through the hill on the west. New arteries to the south have been provided by the opening of Hill Street. It is now proposed to cut Broadway through to the south. Work will start soon on new viaducts over the Santa Fe and Union Pacific tracks and the river on the east. Tenth Street is now being opened and widened to 100 feet, and will extend entirely across the city.

City of Cohoes to Build Houses for Sale to Its Citizens

By Daniel J. Cosgro
Mayor, Cohoes, N. Y.

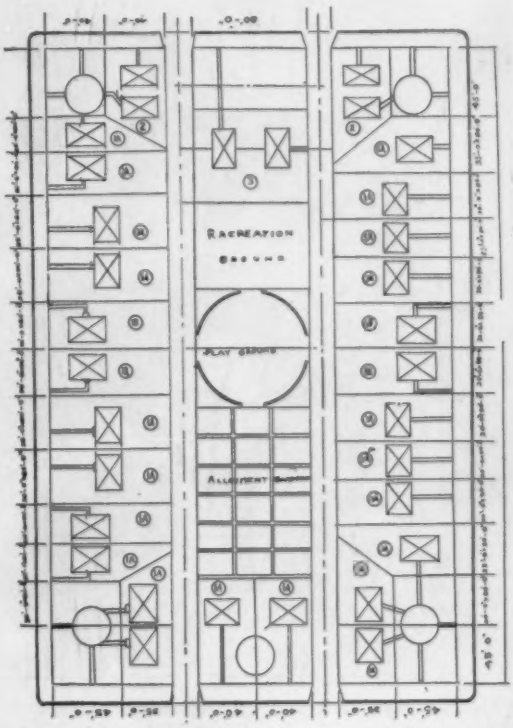
THE city of Cohoes is about to erect a number of houses for sale to residents of the city. The program was entered upon because of the serious shortage of houses in this neighborhood. The crowding of families, it seems to us, will inevitably result in injury to the health of the people and might cause the spread of disease; therefore, under the police power and by virtue of our interpretation of the new home rule act, we believe we have authority to erect a sufficient number of houses to relieve the emergency.

We have to meet the local problem of getting the price of the houses down within the earning capacity of the average wage-earner in this city. The cost of the houses should be from $2,000 to $3,500. Above that the figures would be prohibitive to the average wage-earner who makes from $25 to $35 per week.

The city has taken an option on thirty acres of land in an accessible part of the city and proposes to develop it into a community with ideal arrangements. The lots will be 40 x 90 feet, and for every thirty or forty families we have provided a community recreation center, with playgrounds, tennis courts, etc. The price we are to pay for the land will enable us to deliver the 40- x 90-foot lots at about $50 each. The soil is soft loam. It is all level ground and close by the termination of the present sewer and water systems. The cellars can be excavated at a cost of from $25 to $50. The cost of installing water-mains and sewer systems will be minimized by the short distance of the extension. Water should cost $30 per lot and sewers also $30 per lot. The houses, the plans of which we have already selected, range from a modest bungalow with living room, bath and two bedrooms, to a house with living and dining room and bath on the first floor and four bedrooms on the second floor. The smaller houses can be sold to the purchasers for $2,000 and the larger ones for $3,500.

The city does not propose to go into the real estate business, nor to loan money on bond and mortgage. The prospective purchaser will apply to a bank or building and loan association and arrange for a loan with which he can purchase the building from the city at cost. Inasmuch as the average cost of house building in the customary way in this locality is from $5,000 to $7,000, we expect no difficulty in closing out the houses above described at the low figures mentioned above. The city has authorized a bond issue of $150,000 to finance the enterprise. We do not, however, expect to have to actually sell the bonds. We expect to borrow from the banks on temporary certificates, and pay back the certificates from the sale of the houses. If we decide to sell any of the bonds, we shall use the proceeds only as a means of putting up the houses and turning the money over. That is, as we sell the first $50,000 worth of houses and receive the cash, we shall build another $50,000 worth of houses, and so on in a continuous turnover, until the emergency is relieved.

It will be noticed that we keep our costs down in several ways: First, by buying a



ARRANGEMENT OF HOUSES IN BLOCKS, CITY OF COHOES HOUSING PROJECT

large plot of ground and charging up the lots at cost we eliminate the land speculator's value. Second, by picking a site made up of soft loam, we reach a very low cost for excavation. Third, by letting contracts for a number of houses, we get a lower figure. Fourth, by having the city supply the money at cost, we eliminate entirely the profit of financing by outside investors, which is usually a substantial sum. Another advantage will be that these houses, when erected and sold, will become tax-paying property; thus, instead of the project being a burden or expense to the city, it will help to relieve the housing shortage and will be at the same time a revenue producing project of benefit to every taxpayer.

In all this work we have had great assistance from our young City Engineer, Andrew H. Thompson, without whose skilled knowledge and devotion to the project perhaps we should not have been able to arrive at such a favorable consummation.

A Civic Association's "Know Your Town" Exhibit

By Leroy A. Mershon
President, Westfield Civic Association

THE "Know Your Town" exhibit, recently conducted in Westfield, N. J., under the auspices of the Westfield Civic Association, brought before the people in an impressive way the aims and accomplishments of the various municipal departments in their efforts to serve the community. The Fire Department headquarters were chosen as the best location for the exhibit, and during the six days that it remained open, about 10,000 visitors were recorded.

A SECTION OF THE BOARD OF HEALTH'S EXHIBIT
The photographs reproduced on this and the next page are by courtesy of Theo. J. Hintz

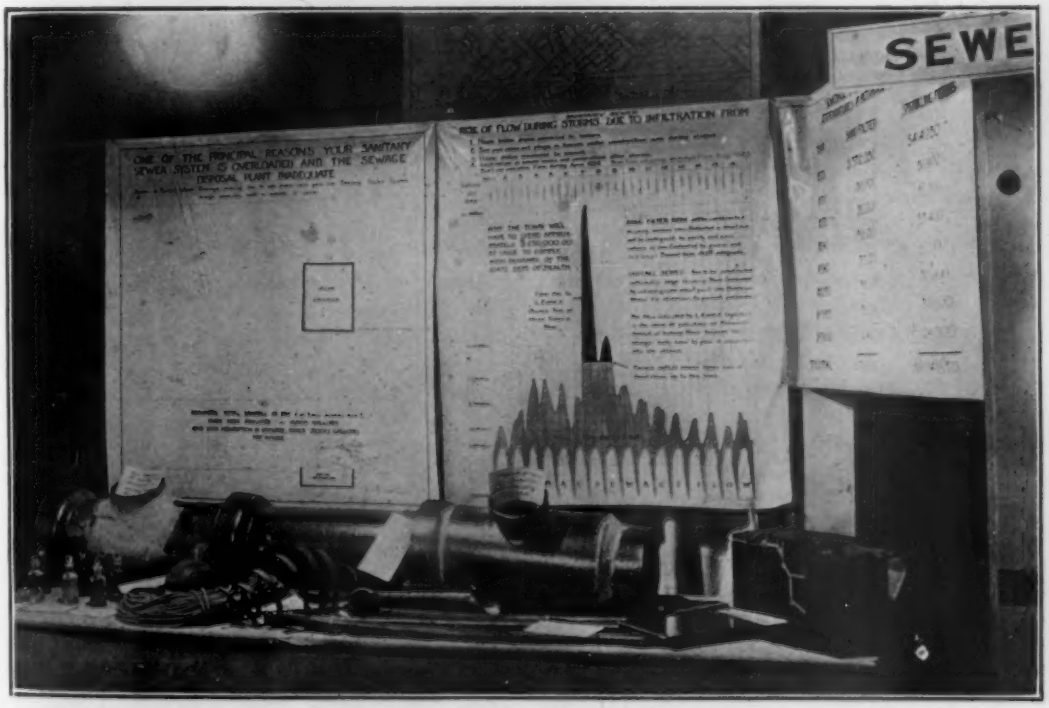
Charts were displayed which showed the organization of the town government, the growth of the town in the past ten years, and the increase in the number of automobiles owned by the people of Westfield. Money bags of various sizes depicted the relative amounts of money taken in by the Collector each year from 1913 to 1923, and diagrams visualized the comparison between the expenditures of ten years ago and those of the present time. At the entrance to the booth stood an obelisk, painted in various colors to show how Westfield's tax rate of $3.41 per $100 valuation will be divided to meet the 1924 town expenses.

In the Roads and Sewers exhibit, prepared by the Town Engineering Department, were displayed a model of the Imhoff settling tank in use by the town, a section of sewer pipe showing the comparison between old and new methods of making sewer connections, and such other samples of the materials and equipment used by the department as the limited space of the booth allowed. The steps necessary to secure road and sewer improvements were shown by diagrams and a map of the existing sewer system was also on display.

The large booth of the Police Department attracted a steady throng of visitors throughout the week. Realizing that working models add considerably to the popular interest, an elaborate model of the Gamewell police signal

THE POLICE DEPARTMENT'S EXHIBIT

A special feature was a working model of the recently installed police signal system


SEWE
ONE OF THE PRINCIPAL REASONS YOUR SANITARY SEWER SYSTEM IS OVERLOADED AND THE SEWAGE DISPOSAL PLANT INADEQUATE
RISE OF FLOW DURING STORMS DUE TO INFILTRATION FROM

DIAGRAMS PREPARED BY THE TOWN ENGINEERING DEPARTMENT SHOWING WHY SANITARY SEWERS ARE OVERLOADED AND THE SEWAGE DISPOSAL PLANT INADEQUATE

The central diagram shows the normal sewage flow in white at the bottom; the middle gray section is additional flow during storms, caused by house drains that are connected to sewers and by infiltration into sewer mains and connections after storms; and the two black peaks show the storm flow increase caused by house leader drains connected to sewers and through open pipe clean-out plugs in houses under construction

system recently installed by the town, including one of the regulation police telegraph boxes used in the system, was put in operation. Officers were on hand to explain the details of the apparatus, and many visitors were shown just how patrolmen could be summoned to their particular localities in time of need. The Police Department finger-print equipment was also put in operation, and a number of people availed themselves of the opportunity to have their identification record made by this method.

CLARK'S POND AND PECKHAM'S DUMP (BEFORE)

The educational exhibit, covering all phases of the public school activities in Westfield, proved one of the main points of interest, particularly to the parents and children visiting the exhibition. The walls of the booth were lined with photographs of school buildings and classes, specimens of the work done by the pupils, and diagrams showing the growth and developments of the various school departments in recent years. The manual training classes put on exhibition samples of their work in carpentry, wood turning, bench work, hammered copper work, mechanical drawing and printing.

The District Nurse in uniform explained her work and displayed some of the useful things which she loans to those in temporary need, such as crutches and carrying and wheel chairs, as well as the dressings she has obtained for her use.

Next to her exhibit was that of the Children's Country Home, a Westfield charity, which provides a convalescent home for tubercular bone condition after operation. Casts and braces formerly used, but discarded by recovery, made an interesting exhibit—with pictures of the children at work and play during their convalescence.

The parks and recreational facilities of Westfield were shown to good advantage by a fine collection of photographs and maps. Several photographs of Clark's Pond and Peckham's dump as they were less than ten years ago displayed beside views of the same spots as they now appear in Mindowaskin Park, were convincing illustrations of what this community has accomplished along the line of city beautification.

The Exhibit Committee was fortunate in securing an excellent model of a section of the New York-New Jersey Vehicular Tunnel, now under construction. The model, which was about twelve feet in length, electrically illuminated to show the interior of the tunnel, demonstrated the kinds of material used in the work and also showed the details of the ventilation system which is being installed. To present a clear idea of the actual size of the tunnel, several miniature automobiles, made to scale, were placed in the driveways of the model.

MINDOWASKIN PARK (AFTER)

The activities of the Board of Health were interestingly outlined by charts showing the results of milk inspection, inspection and care of dumps, vital statistics and contagious

diseases in Westfield covering the past five years, etc. A model of plumbing underneath a bathroom floor was on view, and also samples of cellar clean-outs demonstrating how they should be cared for. Motion pictures of a model dairy in operation were presented.

In the historical display of the Fire Department, Westfield's first fire engine, "The Little Giant," and other relics of earlier days, standing beside the modern motor apparatus with which the Department is now equipped, showed clearly the great progress that has been made in fire-fighting apparatus.

A municipal exhibit of this kind cannot fail to give the people of the community a clearer conception of the scope and function of the various branches of the city's work, and through this broader knowledge of what is actually being accomplished will be aroused a greater pride and interest in civic affairs.

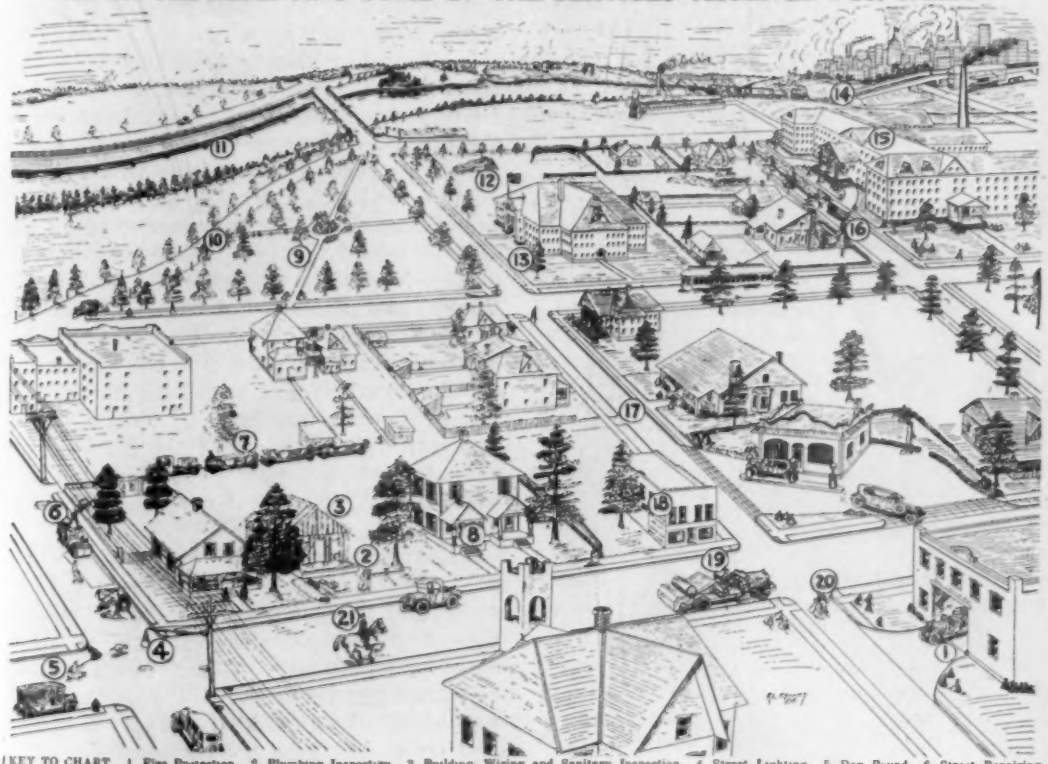
Visualizing a City's Service to Its Citizens

THE accompanying chart, in considerably larger size, occupies two facing pages in the recently published Report of the Business Affairs of the City of Indianapolis, by City Attorney James M. Ogden. In addition to this visualization of the city's principal services to its citizens, the pamphlet goes into some detail as to the activities of the city government and presents the following analysis of the distribution of the tax dollar for the year 1923:

Track Elevation	$ .007
Park General	.062
Recreation	.011
Health General	.082
School Health	.003
Park District Bond Fund	.034
War Memorial Bonds	.011
Street Resurfacing	.004
Improvement Sinking Fund	.003
Sanitary Maintenance	.060
Sanitary Construction	.097
Sanitary Bonds	.011
Fire Pension	.008
Police Pension	.009
General City Sinking	.026
Flood Prevention Sinking	.017
Tuberculosis	.005
Erecting Hospital	.036
Board of Public Safety	.255
General Fund—	
Board of Public Works	.163
Purchasing Department	.002
City Plan Commission	.002
Law Department	.004
Finance Department	.098
	$1.000

A copy of the pamphlet will be sent to any reader of THE AMERICAN CITY on application to Mr. Ogden.

CHART REPRESENTING SOME OF THE SERVICES RECEIVED FOR TAXES



KEY TO CHART 1. Fire Protection. 2. Plumbing Inspection. 3. Building, Wiring and Sanitary Inspection. 4. Street Lighting. 5. Dog Pound. 6. Street Repairing. 7. Ash and Garbage Collection. 8. Protection from Disease. 9. Pleasure Parks. 10. Boulevards. 11. Flood Prevention. 12. Playgrounds and Recreation. 13. Schools. 14. Track Elevation. 15. Hospitals. 16. Sewer Maintenance. 17. Street Resurfacing. 18. Weights and Measures and Meat Inspection. 19. Street Cleaning. 20. Civil Engineering. 21. Police Protection.

Trolley or Bus in the Small City?

A Problem Largely Dependent on Paving Charges

By Walter Jackson

Fare and Bus Consultant, Mt. Vernon, N. Y.

WHEN every week brings the news of another small-city electric railway, or at least a portion thereof, abandoned in favor of the motor-bus, we cannot wonder at the laymen's impression that the trolley car is becoming "as one with Nineveh and Tyre."

Is this all true, partly true, or not true at all?

A blanket answer cannot be given, but we can discuss particular instances and draw a fairly clear conclusion from each, to enable the reader to analyze his own situation with a better understanding of the pros and cons.

Before taking up individual cases, let us consider a few general features that apply more or less to any car *vs.* bus problem.

The Permanent Advantages of the Bus

1. It is not confined to a track and therefore may go around a slower or stalled vehicle.
2. Its freedom from a fixed route permits the still greater flexibility of using other streets, whether to escape a parade or a fire, or serve an off-side traffic magnet like a circus.
3. Its ability to take on and discharge passengers at the curb draws patronage by relieving the patron from the hazard of waiting in the street.
4. Its low first cost and transferability to other places permit the transportation concern to test out different streets and any desired length along them as feelers for new business.
5. It uses the same highway as other vehicles, with no demand for a special roadway nor obstructive poles and wires.
6. It affords greater safety and punctuality as contrasted with the single-track operation common in cities of below 50,000 inhabitants.
7. A much smaller staff is needed than in small cities with railways requiring power, track and line engineers beside car equipment men.

The Temporary Advantages of the Bus

1. It is a novelty—and the American people like new things.
2. Communities encourage its coming, even to the point of free waiting-rooms, while opposing railway improvements.
3. The bus operators, as a class, have any misdeeds in public relations ahead of instead of behind them.
4. The bus operator does not pay as heavy a tax as the longer-established utility.

Present Disadvantages of the Bus

1. It is not as spacious as the electric car, particularly in aisle and seat widths and in headroom.
2. It cannot carry a standing load twice a day without materially shortening its useful life, so is not satisfactory for a vehicle-for-vehicle replacement on lines with heavy peaks.
3. It is not so well ventilated, heated or lighted as the odorless trolley with unlimited power supply.
4. It is not so comfortable and free from anti-reading vibrations as a good car on smooth track.
5. It offers less assurance of unbroken service to the public in the event of poor revenue than does an electric railway, which cannot fold its tents in the night and silently steal away.

First Case Points to Retention of Trolley

The foregoing classifications do not attempt to cover all of the possibilities, but enough are given to show what one must consider in a general survey. Our next purpose is to examine actual cases where the bus is being considered or has already been installed. The upshot of these specific examples will tend to prove that one of the greatest advantages to the motor-bus operator in city service is the temporary one of freedom from paving charges and other special taxes that have grown onto the trolley as barnacles on an idle hull.

Case No. 1 is a trolley route which passes through two adjoining communities. The line is well patronized in the larger community, but does much less business in the smaller and less-developed place of 7,000 inhabitants. The smaller town is now entering upon a paving program which would cost the railway possibly $50,000 for paving assessment alone, regardless of the cost of new track structure and rail.

The easiest way out of the situation would be to substitute a shuttle bus under state license and to charge even a higher rate of fare than that permitted at present. The change from through service, however, would be a great inconvenience to the passengers and an undoubted injury to the town. It would also be an injury to the transportation company in the expected event of an extension of the present trackway to a third community.

ONE OF FOURTEEN GMC BUSSES PURCHASED BY THE WATERTOWN (N. Y.) TRANSPORTATION COMPANY OVER A PERIOD OF SIX YEARS

Now the obvious thing here is for the town to waive the paving charge. It certainly would not receive an equivalent amount from the bus operator, whoever he might be; and just as certainly the railway has no intention of continuing to pay for "everybody's highway."

Second Case Shows Place for Bus and Car

Case No. 2 is a railway in a city of 30,000 inhabitants. The municipality is anxious to go through with a paving program which, for its first portion, would extract a mere $120,000 from the railway. In this case, the city railway forms part of a larger system, so that it has no such high salary overhead as would be the case if it were an independent road with a diversity of engineering talent, small, inefficient power-plant and so on.

An analysis of the routes showed that on the basis of equal taxation, it would be better to run busses on two thin-traffic lines because of the desirability of change in routing and extensions. It would also be desirable to install busses on an entirely new route to develop the traffic possibilities.

On the other hand, one route does such good business that the most desirable solution would be to substitute double-truck one-man cars in place of antiquated single-truck two-man cars. It would be impossible to handle the peaks on this route without using twice as many busses as cars of the proposed type. Furthermore, a portion of the present route is on right of way with an attractive waiting-platform in place, whereas the busses would not be accessible at this locality unless the city most obligingly would pave the still-theoretical highways.

Here is another example where the waiving of the paving charge would enable the transportation company to give the public whatever was the best for all concerned. Conceive the disappointment of the municipality when it learns that it will be "dished" out of the $120,000. Why not make the best of it, so long as the railway can now escape the anachronism of paying for something which others, *not itself*, wear out.

One Company Finds a 5-Cent Bus Fare Impossible for a Scattered Population

Case No. 3 is of exceptional interest because of its relation to the fare question. In a scattered city of 30,000 the original trolley routes had been laid out by a land development company. The desire to escape excessive prices for real estate along these routes perhaps accounts for the fact that the town chose to grow in a contrary direction, and this tendency was promoted, of course, by the personal automobile. The present owners of the property, a syndicate which was one of the pioneer bus operators, decided to rebuild almost all of the system and reroute with motor-busses.

One condition imposed by the city was that the operators should try a 5-cent fare in place of the average 6½ cent fare on the trolleys. Although the average length of haul in this city is less than 1½ miles, the company after a year's trial was forced to return to the trolley fare. The cost of operation and return on investment could not be met on a 5-cent fare by an organized company compelled to operate unfailingly and to high standards of service, although independent jitneurs working 12 hours a day for themselves and with any kind of vehicle might have made a go of it. While the bus substitution was the right policy, the city was wrong in expecting that the increase in traffic and decrease in costs would justify a 5-cent fare.

ONE OF SIX AUTOCAR BUSSES USED BY THE SCHOOL DEPARTMENT OF LOWER MERION TOWNSHIP, PA., FOR CARRYING ABOUT 150 CHILDREN TO AND FROM SCHOOL EVERY DAY

One Modern Bus System That Costs Less and Earns More Than the Trolley

Case No. 4 deals with a city of 33,000 where all the local trolley routes have been superseded by busses under the same control. In this instance the gain has been twofold. First, the novelty and easier accessibility of the busses appear to account for a 10 per cent increase in patronage. Second, the simpler organization (substation shut down, for example) has permitted a lower operating expense. In this example of an independent company, we have one where the "bussification" was 100 per cent justified.

A 25-PASSENGER PAY-ENTER GARFORD BUS, OPERATED BETWEEN WILLIAMSPORT AND BLOSSBURG, PA.

Motor Bus Charges More Fare While City Gets Practically No Taxes

Case No. 6 was that of a community of 22,000 which lost its electric railway service because it would not meet the then deficit of $20,000 a year. The haphazard jitney successors were soon followed by an organized bus company. This company undoubtedly gives better service than did the electric railway in the first year of its reorganization. It is to be observed, however, that the only fees which the operator pays are nominal property taxes and $10 per bus per annum. Nowadays the community does all the paving at its own expense.

At the time the electric railway quit, the fare was 10 cents flat, with no cheaper tickets. To-day the same railway on other divisions has ticket rates varying from 12 to 20 for a dollar, according to the cost of service in each district. The successor bus company in the abandoned territory charges the same basic fare of 10 cents, and has lately had to answer a complaint as to excessive fares on a cross-country extension which never paid any of its bus predecessors at either higher or lower rates.

Had this particular community shown the same patience during the reorganization as others, it would doubtless have received better trolley service and probably enjoyed a somewhat lower scale of fares than is given under a bus company which goes almost scot-free as to taxes.

Municipality May Regret Present Discrimination

The foregoing cases may be numerous and diversified enough to show what points the municipal official must consider in this question of car *vs.* bus. The time is almost by when electric railways refuse to recognize that the bus should be an integral part of their operation. When an electric railway can show that it cannot afford to pay the taxes demanded, the wise city official will approve whatever form of propulsion offers the most service for the money with the least annoyance to the public. One thing is certain—that if a municipality must have the amounts that formerly came from the electric railway, it will seek to get them out of the successor bus company. After all, the paving and bridge charges paid by many railways are not really an equivalent for some expense made by the community but are, frankly, a tax on the privilege of a monopoly in public utility transportation.

Therefore, the time must come when both forms of propulsion will be judged on the same basis. In the end, the Tax Collector, like Time, will be served!

SEVEN OF THESE LATEST TYPE MACK LOW CITY BUSSES ARE HANDLING THE TRANSPORTATION REQUIREMENTS FOR THE CITY OF MIDDLETOWN, N. Y.

For an authoritative discussion of Public Utility Ownership and Regulation, see article under that title, by Delos F. Wilcox, in the 1924 *Municipal Index*.

Forward Steps in City and County

Thirty Towns Unite in Cooperative Fire-Fighting Program

DALLAS, TEX.—A well-organized system of cooperation between the large city and the surrounding smaller communities in the matter of fire protection service has been worked out in District 17, Dallas. In December, 1921, the fire chiefs of all towns in this District, which covers all of Dallas County in addition to some communities in adjoining counties—about thirty towns in all—organized a mutual association for the purpose of formulating a cooperative fire-fighting program. Since that time, meetings of this body have been held once every three months in some town in the district, with the fire chief of the convention town presiding. In connection with these meetings a thorough inspection is made of fire protection conditions in the convention town, and at regular intervals fire prevention lectures are given in the public schools.

Through the efforts of the Fire Chief of the city of Dallas, an arrangement was made between the city and the county whereby the county bought a 750-gallon LaFrance pumping engine, to be manned and operated by the Dallas Fire Department and sent out in response to calls from any community in the District. The installation of interchangeable hose couplings has been perfected throughout the District, and a running card schedule, specifying the calls to which each town shall respond, has been adopted. This schedule has been so planned that each town goes to the assistance of its nearest neighbor, and in the case of a town which has but one piece of apparatus, additional departments are scheduled to assist. The city of Dallas is ready to respond in all cases.

Since the establishment of this system of cooperation, it has been gratifying to note the increased interest in fire protection on the part of the smaller towns. Many of them have installed water-supply systems.

One of our aims is to secure the passage by the Legislature of a bill controlling the over-insurance problem now existing in Texas, and to this end a committee of the association of District 17 has been appointed to cooperate with the Legislative Committee of the State Firemen's Association in the matter.

T. A. MYERS,
Chief, Dallas Fire Department.

A Ten Per Cent Tax Refund

KNOXVILLE, TENN.—A ten per cent tax refund has been voted by the Council of the city of Knoxville to taxpayers on account of the tax levy of the current year. This has the effect of reducing the tax rate from $2.44 to $2.196.

When the city manager charter came into effect at the beginning of Knoxville's fiscal year, October 1, 1923, the Council was faced with the immediate task of preparing a budget. It had only the experience of former administrations to guide it. Taking the expenditures of the previous fiscal year as a basis, the Council made up a budget which involved a reduction of $500,000 in expenditures. Then they estimated the revenues and

To the Taxpayers of Knoxville:

The Council finds that partly by reason of underestimating the revenues to be expected and by reason of the efficient management of our administration officers and their diligent development of our various sources of revenue, the city has a surplus in its revenue assets. What the exact amount of this surplus will be at the end of the fiscal year cannot now be accurately determined, and the Council would prefer to deal with facts as they are now ascertained, and not base any action upon an estimate, however carefully made, of the operations of the remaining two months of the fiscal year.

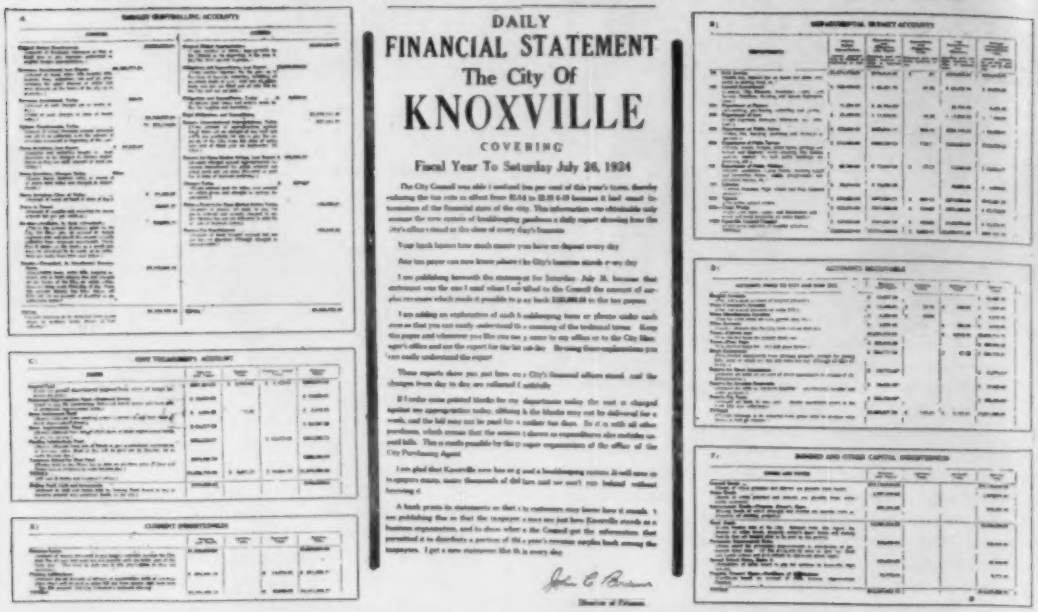
However, the Council has ascertained from the City Manager and the Director of Finance that additional revenues are accruing and that the expenditures will be less than was provided by the budget. It also finds from the certificate of the Director of Finance that there is at this time a surplus in accrued revenues of $300,000 in round numbers, already accrued, over and above all of the requirements to meet the budget in full, should every dollar be expended.

The Council had nothing to guide it when it took office except the experience of the previous fiscal years and it made its estimates of revenues and expenditures accordingly, substantially reducing the expenditures at the outset and basing its estimate of the revenues upon the best obtainable information. Now that a modern system of municipal accounting has been installed and we are able to learn from day to day the exact financial status of the city, we find that we are able at this time to refund to the taxpayers ten per cent of the amount of the tax levied. To those taxpayers who have already paid their taxes, this will be refunded by check; and those who have not yet paid will have ten per cent deducted from the amount of the tax bill.

We are glad to be able to make this refund because we believe it to be our duty so to manage the affairs of the city that no more money will be taken from the taxpayers than is necessary economically to operate the business of the municipality, just as we believe that it is equally our obligation to levy a tax sufficient to meet the operating expenses of each fiscal year without piling up a deficit in the form of floating debt.

ANNOUNCING THE TEN PER CENT TAX REFUND TO THE PEOPLE OF KNOXVILLE

HOW YOUR CITY KEEPS ITS BOOKS



DAILY
FINANCIAL STATEMENT
The City Of
KNOXVILLE
COVERING
Fiscal Year To Saturday July 26, 1924

THIS DOUBLE-PAGE NEWSPAPER ADVERTISEMENT ACQUAINTED THE PEOPLE OF KNOXVILLE WITH THE NEW METHOD OF KEEPING THE CITY'S BOOKS

levied a tax rate of $2.44 to balance the budget.

When I assumed the duties of City Manager in the middle of December, I began immediately the installation of an improved accounting system. As the units of this system were installed, improvements in collections began to be manifest, and the assessments of new buildings and of personal property as well as of mercantile stocks began to increase. There was no general assessment of land values this year.

By the middle of June the new financial system began to produce daily reports which clearly indicated that there would be a surplus in revenues. On the 26th of July this surplus, after setting up adequate reserves for errors in assessments, slow collections and the like, amounted to more than $300,000.

Thereupon, I recommended to the Council that a ten per cent refund in taxes be ordered, which was done.

Revenues to accrue during the remaining two months of the fiscal year, and savings on account of under-expenditures in the budget, will bring the city to the end of the fiscal year with a surplus of approximately $300,000 in its current realizable revenue assets.

Last year the tax rate was $1.90, but, based on the existing assessment, the tax rate should have been $2.93 to meet the expenditures actually made, which produced a deficit in round numbers of $1,000,000. This year, the tax rate was fixed at $2.44 to balance a reduced budget (which included $160,000 to apply on interest on funding deficits from the former administration) and now we find that by reason of underestimated revenues and overestimated expenditures, we can close the year with a surplus with a tax rate of $2.20. It would have been easy, of course, to have retained all the surplus, but this probably would have encouraged extravagant expenditures, and the Council agreed with me that it was better to make the refund direct to the taxpayers.

LOUIS BROWNLOW,
City Manager.

"Pill-Box" Patrol System Recommended for Cities of 25,000 to 200,000 Population

OMAHA, NEBR.—The "pill-box" patrol system installed by the Omaha Police Department in May, 1923, has greatly increased the efficiency of the police protection of our residential districts. Unlike most cities of similar size, Omaha has but one permanent police substation. We have 38 square miles of territory within our limits, and, necessarily a large portion of the suburbs is quite a considerable distance from either the central station or the substation.

Ten pill-box patrols have been established at advantageous locations in outlying districts. Each station is manned by two officers, equipped with a motor-cycle and side-car, and, in addition to the side-arms carried by the men, is supplied with a repeating shotgun and a box of shells loaded with buckshot for use in emergencies. During the first twelve months of their operation, the total number of calls answered from the ten stations was 10,558; the number of arrests made, 3,951. Several hold-up bandits were captured by the pill-box squad before they were able to get out of the neighborhood in which the crime had been committed. Many thieves were caught while in the act of burglarizing outlying business houses, the officers having been notified by persons living in the vicinity of the buildings where the crimes were being committed..

The use of the automobile by criminals has so completely revolutionized the police system in the

MOTOR-CYCLE OFFICERS EMERGING FROM PATROL STATION

large cities, that unless we get quick action on calls and have fast-moving vehicles ready to take up the trail, it is impossible to cope with the situation. Since the establishment of the pill-box patrol system in Omaha, the average time taken to answer a hurry-call has been about four minutes. The call comes to the central station and is immediately relayed to the nearest patrol. If the call is one of more than ordinary importance, two patrols are simultaneously notified, so that four men are on the ground within a few minutes after the call has been received.

In the writer's judgment, this system should prove especially valuable in cities ranging in population from 25,000 to about 200,000. In cities attaining a larger growth, permanent substations are usually installed, but even in these cities, the pill-box patrol could no doubt be used to good advantage beyond the limits of the substations.

H. W. DUNN,
Superintendent, Department of Police, Sanitation and Public Safety.

Gift of Fifteen-Acre Tract Provides Summer and Winter Playground

CLAREMONT, N. H.—The fifteen-acre site of Claremont's popular playground, Monadnock Park, which was presented to the city by George A. Tenney, Treasurer of the Monadnock Mills, was originally a swampy tract of land entirely unfit for recreation purposes. When work on the playground was started in 1917, it was the thought of the local committee that the ground could be drained by means of ditches and land tile. Before any steps were taken in this direction, however, the city secured the opinion of the late Charles E. Putnam, at that time Chief Engineer of the Park and Recreation Department of Boston, who made it clear that the problem was one of raising the level of the ground rather than one of drainage, since the flooded condition was due to the fact that the land level was too close to the normal level of the adjacent river.

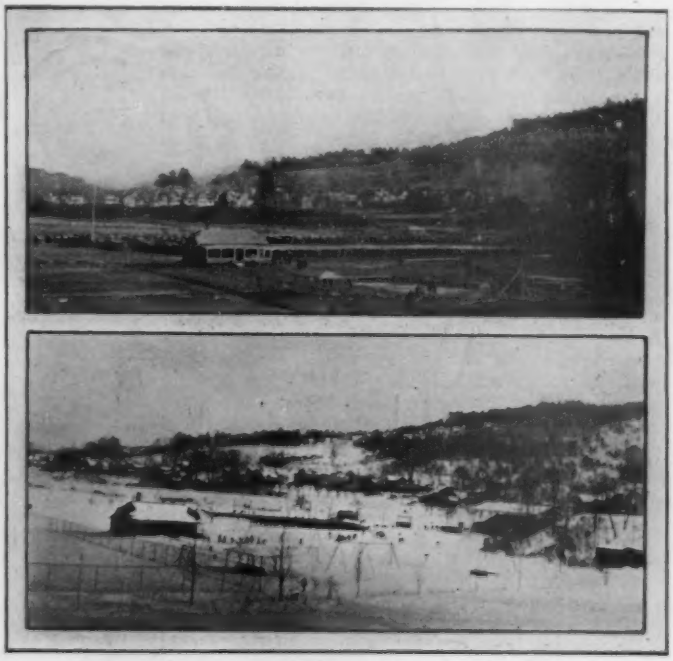
It so happened that at that time one of the large manufacturers here had under way construction work requiring the removal of several thousand loads of dirt. As their contribution to the playground project, they agreed to unload the dirt onto the playground, at their own expense, instead of disposing of it at a near-by dump at about one-third the cost. In the middle of April, when the dumping was commenced, parts of the ground were so completely under water that a load of dirt would entirely disappear when dumped, but by July an area of about four acres had been raised and graded. This was promptly put to use as a baseball field.

That same year a children's corner was installed and this has since been added to as necessity required. Two years later a grand stand was built, with an indoor rifle-range and shower-baths beneath it. Five tennis courts have been laid out and these are in almost constant use throughout the season. The field is also used for football and hockey. During the winter months part of the ground is flooded and a skating rink operated under supervision, the water for this being supplied by a brook whose natural course lies across the park but which during the summer is diverted to a more distant point and carried to the river.

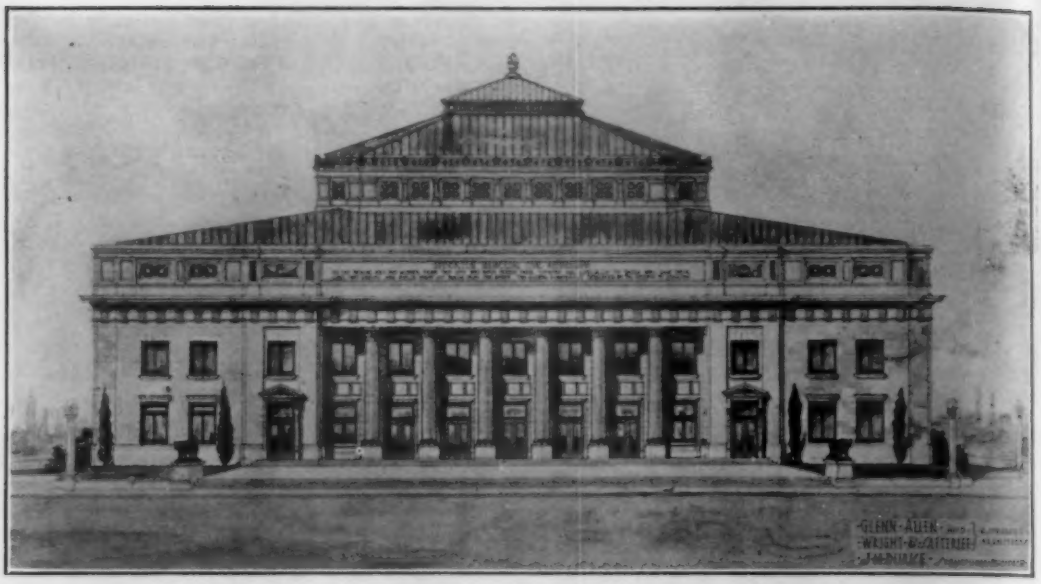
The attendances at special activities on the playground last year included: football, 10,350; shower-baths, 1,368; hockey- and skating-rinks, 8,400; tennis, 3,500; Stevens and Sunset League baseball games, 7,000; indoor rifle-range, 1,600.

The average daily attendance on the playground throughout the year is close to 500, and in the summer season about 150 children use their corner each day.

R. G. BLANC,
Chairman, Monadnock Park Commission.



RECREATION GROUND, CLAREMONT, N. H., IN SUMMER AND WINTER



MEMORIAL CIVIC AUDITORIUM FOR WHICH CONTRACT HAS BEEN LET BY STOCKTON, CALIF.

Memorial Civic Auditorium

STOCKTON, CALIF.—On July 23 a contract was let by the city of Stockton for the erection of a Memorial Civic Auditorium, dedicated "to the heroic men and women from this city who nobly served this country and especially to those who gave their lives that liberty and justice might not perish from the earth." The cost of the structure, exclusive of the land on which it stands, will be $482,338.

The arena will be circular in shape, with a stage adequate for the largest grand operas or spectacular plays. A total seating capacity of 5,000 can be secured by throwing the small lecture hall and the banquet room into the main auditorium when the full capacity of the building is required. These smaller rooms are closed by rolling partitions when desired for separate use.

The main front of the building is to the east, but all four sides are treated as fronts, so that the building will have a pleasing appearance when viewed from any direction. The architecture is in the Roman Doric style, with massive columns and pilasters on all fronts. In the commodious lobby at the main entrance there will be four large bronze memorial tablets, two at each end. These are to bear the roll of honor of the different patriotic societies. The main lobby opens directly upon the foyer at the rear of the main auditorium, which extends entirely across the building with exits at the north and south sides. From the main lobby two inclines lead to the balcony and mezzanine floor. The foyer opens directly to the arena of the main auditorium. The arena has a level floor of hard maple, 120 feet in diameter. At the right of the arena is the lecture room, 32 x 65 feet in size, with a separate outside entrance, ticket offices and motion picture projection room; also a stage with equipment for small theatricals, lectures, motion picture exhibits, etc. At the left of the main auditorium is the banquet room, 32 x 86 feet in size, provided with kitchens, service rooms, etc.

From the arena two inclines lead to the west side of the building, so that parades may enter from the street, drive around the arena and leave at the opposite side, and the balcony of the auditorium may be used as a reviewing stand for parades, pageants, etc.

On the south of the main lobby provision is made for the club and lodge rooms of The American Legion, and on the north side for other patriotic societies. On the east side of the building is provided a beautifully finished memorial hall and museums, 25 x 65 feet in size, for war relics.

The entire building is to be heated and ventilated by a low-pressure mechanical system of steam heat, fresh air being brought in through supply fans and taken out by exhaust fans so as to change the air in the auditorium every fifteen minutes.

The building will have exterior walls of brick with an interior steel frame for all floors and roof. Partitions will be of steel studding and metal lath. The floors will be of concrete, finished with linoleum or tile, and with a maple floor for the main arena, banquet room and lecture hall.

The seating capacity of the Stockton auditorium compares with those of other cities as follows:

Auditorium	Capacity	Population (1920)
Atlanta, Ga.	5,000	200,616
Buffalo, N. Y.	7,000	506,775
Cleveland, Ohio	12,000	796,841
Forth Worth, Tex.	1,800	106,482
Houston, Tex.	5,000	138,276
Lowell, Mass.	4,500	112,759
Oakland, Calif.	10,000	216,261
Savannah, Ga.	2,000	83,252
Springfield, Mass.	4,000	129,614
Stockton, Calif.	5,000	40,296

According to present prospects the work should be far enough advanced so that the cornerstone can be laid with appropriate ceremonies on Admission Day, November 11. It is hoped to complete the structure by August, 1925.

CHARLES E. ASHBURNER,
City Manager.

The Relation of the Condition of a Pavement to the Methods of Cleaning

Abstract of Proceedings of Fourth Annual Conference of the International Association of Street Sanitation Officials

THE cleaning of a smooth, uniform pavement is not difficult, for all of the mechanical means of street cleaning may be used effectively and hand-cleaning, although expensive, is not difficult. In the case of rough pavements or those having street-railway tracks, the difficulties multiply rapidly. They have been discussed in an interesting manner by representatives of various cities attending the Fourth Annual Conference of the International Association of Street Sanitation Officials.

St. Louis, Mo.

Clinton H. Fisk, Director of Streets and Sewers, St. Louis, Mo., brought out the fact that St. Louis has practically every kind of street-cleaning equipment and method. The asphalt pavements are cleaned with a vacuum cleaner. The brick, granite block and other pavements are cleaned by flushing and by broom methods. A street that is rough cannot be cleaned satisfactorily with the vacuum cleaner or by flushing. In St. Louis, they do not try to clean streets with irregular surfaces or depressions by vacuum or by flushing, but go over them with the machine sweepers and then clean out the low or irregular spots with white wing laborers. It costs two or three times as much to clean an irregular street or a street in bad condition as to clean a street with a good surface. Believing that it is cheaper to renew the pavement, this is usually resorted to as quickly as possible.

The cleaning of irregular block streets by the brooming method has been found most successful. The vacuum cleaner tended to suck out everything that was between the blocks, and flushing drives the filler from between them. They are taking up the old blocks from the granite block streets and repaving with re-cut granite blocks, which with a grout filler gives a smooth granite surface. These streets can be cleaned readily with a flusher. The city has no trouble with the granite blocks.

Racine, Wis.

George A. Gregory, Street Commissioner, Racine, Wis., reported that they have granite block, asphalt, brick, reinforced concrete and asphaltic concrete, as well as water-bound macadam streets. Some of the streets which are very irregular require two trips with an Elgin sweeper to make a good job. In the down-town district, six white wings are employed. Heretofore they have always had about twenty-four white wings on asphalt streets. Last year these were displaced with the sweeper. In all, there are 51 miles of pavement in Racine. After heavy rains the men and teams are sent around to the catch-basins to clean up, thus doing away with the sweeper for one or two days.

Chicago, Ill.

W. J. Galligan, Bureau of Streets, Chicago, Ill., reported that the methods of street cleaning in Chicago have not undergone any radical changes in the last ten or twelve years, as they use mechanical apparatus where possible. A few years ago, the street cleaning was done entirely by hand, but certain changes, such as the restriction of immigration, have made it necessary to look to mechanical apparatus to do practically all of the work of hand sweepers. Chicago, like other large cities, employs hand brooms, machine brooms and flushers. Street cleaning is generally a question of standards of cleanliness set by the people themselves. A city is as clean as its inhabitants. If they want a clean city, they will demand it and furnish the necessary funds to secure it.

There is a provision in the Surface Lines' charter in Chicago which provides that the street-railways shall pay to the city of Chicago $60 per month per mile of double track cleaned. This amounts to about $280,000 per year in Chicago, which is considerable income for the Street Cleaning Department.

Boston, Mass.

Edward F. Murphy, Sanitary Division Engineer, Boston, Mass., reported that Boston takes charge of and cleans all the street-car lines from one end of the city to the other, except in the snow season, when it is the duty of the railway company to do its own cleaning. Any snow removed from the tracks is removed by the street-car lines. But

the street cleaning, other than snow removal, is done by the city.

Minneapolis, Minn.

F. D. Furlong, Street Commissioner, Minneapolis, Minn., reported that there are 13 miles of double-track street-railways in his ward, and the street-railway company pays into the street fund for the cleaning of this track $2,600 every year. They pay $1,600 into the sprinkling fund for the extra sprinkling, and for the removal of snow they pay for 19 feet of the street. In other words, if the street was 38 feet wide, they would pay half of the expense of removing the snow on that street. The street cleaning on the car lines, the sprinkling, and the removal of snow are handled in this way in every ward in Minneapolis. The Minneapolis form of municipal government is slightly different from that of other cities, as each ward is a unit in itself. The aldermen and street commissioner in each ward are charged with the responsibility as to the methods and equipment used in street cleaning.

Evanston, Ill.

Hal W. Smith, Commissioner of Streets, Evanston, Ill., reported that they have practically every class of pavement common to other cities, totaling about 115 miles of paved streets, of which 80 miles are Tarvia surface water-bound macadam, 30 are brick, and the remainder asphalt and concrete. They do not do any flushing, but perform most of their work with a motor pick-up sweeper. The residence streets are cleaned only seven times during the summer. Considerable time was lost last season by reason of rains. There is a high percentage of dirt, running a trifle over 6 cubic yards per mile of street cleaned. The motor pick-up sweeper works as well on the macadam streets as on the other type of pavement, and leaves them in good condition. The business section of the city is swept three times a week.

Newark, N. J.

Goline Doremus, Engineer of Street Cleaning, Newark, N. J., reported that Newark has a considerable mileage of tracks, but has never asked the surface lines to pay for anything, so far as the cleaning is concerned, except in the matter of snow removal, for which the street-car lines are expected to pay the cost of cleaning between the tracks and about one foot outside. It has been so difficult to get them to pay their proportionate share that certain streets have been set aside which must be cleaned by the street-car lines, while the city cares for the entire business district where there are other tracks.

Newark cleans its streets mechanically, chiefly by flushing. They have one mechanical sweeper and use block men and gangs for pavements. There are about 287 miles of pavement in Newark, most of the pavement being smooth asphalt, brick, or improved granite block pavement with an asphalt or a gravel filler.

Relief of Street-Railway Companies from Paving Charges

Forty-six cases in which street-railway companies have been either wholly or partly relieved of the expense of maintaining pavement are cited in the August, 1924, issue of *Aera*, by J. F. Bickmore, of the Statistical Department of the American Electric Railway Association. In addition, the article reports that two states have enacted state-wide relief. To quote in part:

"In the large majority of cases the relief has been of a permanent character, having been obtained by new franchises and by ordinance amendments. Two important decisions granting relief to street-railways have been decided recently by Public Utility Commissions. The beneficiaries in these two cases were the Virginia Railway & Power Co. and the New York & Queens County Railway. In each of these two cases the financial condition of the railway was critical and the imposition of heavy paving taxes made the situation unbearable. The decision in each case prevented suspension of service and its consequent injurious results. In many cases it has not been necessary to appeal to the courts or Commissions for relief, since either the voters were made to see the situation in its true aspect with a consequent ordinance amendment providing relief, or an amicable settlement was contrived with city officials to the mutual advantage of both the city and the railway.

"The relief provided has ranged between complete exemption from the franchise requirement calling for original paving, repaving and maintenance of pavement by the company, and the relinquishment in part only of the cost of original paving. Novel aid was given the Youngstown Municipal Railway by the city of Youngstown in 1921. The railway was required to pave approximately six miles of its single-track right of way, and at that time was without sufficient funds to do so. The city loaned the company the necessary money which it raised by the sale of its general bonds. The company in turn gave the city its note amortizing the debt over a period of nineteen years. The company was thus assisted by the city's credit in raising money which it could not have otherwise obtained and was furthermore enabled to obtain it at advantageous rates."

A Unique Method of Cleaning Filter Sand

By C. H. Capen

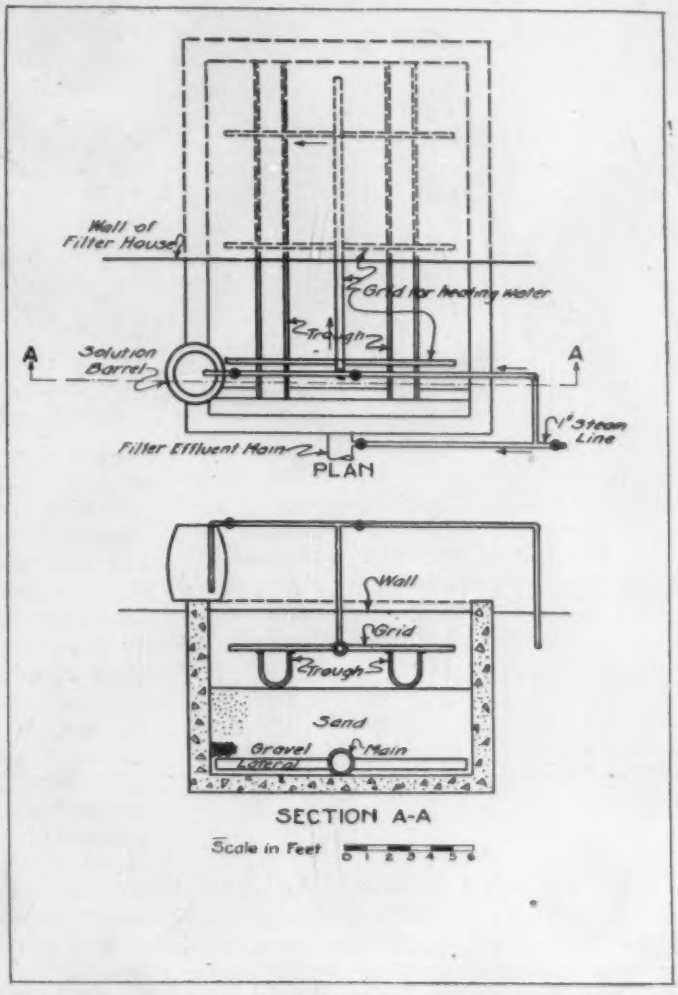
Assistant Sanitary Engineer, Bureau of Engineering, State Department of Health, New Jersey

THE city of Salem, N. J., secures some of its water from Quinton Pond, and the remainder is obtained from deep wells. The surface supply is treated by aeration, coagulation, rapid sand filtration, and chlorination. The raw water has a normal alkalinity of 1 to 21 parts per million, color from 35 to 120, and a turbidity ranging from 15 to 170. The use of soda ash is necessary at practically all times, but, even with careful adjustment of this and the alum, the very finely divided suspended solids of a colloidal nature cannot be settled out. The turbidity increases after a heavy rain-storm, and the result is that large quantities of the suspended solids are carried over to the filters. The filtered effluent is satisfactory from a bacteriological and chemical standpoint, but because of the accumulation of mud the filters were not able to maintain their rated capacity for as long a period as when they were clean, even though they were washed more frequently than was necessary when they were first installed.

The filters, three in number, are rectangular, with perforated laterals of the Harrisburg type. They have been in operation since January, 1920. Serious clogging, which doubled the amount of wash water used, led to the suggestion by the State Department of Health that the filter sand be thoroughly cleaned.

Experience at Little Falls

In the autumn of 1922, the rapid sand filters of the Passaic Consolidated Water Company's plant at Little Falls, N. J., had become clogged with oil which it is believed had been applied to the surface of the water up-stream by the various county mosquito extermination commissions. Immediate washing of the filter sand was necessary and, as a result, Frank Green, the superintendent of filtration at the Little Falls plant, developed the use of a combination of caustic soda and soda ash to wash the sand without removal. The results were very gratifying and his description of the process led the Department to believe that the same general method could be applied at Salem to restore the mechanical filters to normal efficiency.



PLAN AND SECTION OF FILTER SAND CLEANING EQUIPMENT

Difficulties Encountered at Salem

The operators at the Salem plant did not exercise sufficient care in washing the filters, and the very fine mud accumulated in the beds to such an extent that it could not be removed by the usual methods of filter washing. The wash water has an available pressure up to 15 pounds per square inch, which is more than is usually required. The overflow edges of the wash-water troughs are about 18 inches above the sand, which is consistent with present standards of design. The finely divided solid materials could not be raised or moved up into these troughs, even when so great a wash-water pressure was applied that the sand was raised beyond a safe amount.

The accumulation of this finely divided mud formed a definitely clogged film of sand and mud about ½ to ¾ inches deep on all the filters. Below this the presence of mud tapered off, but numerous mud balls were found at depths of a foot or more below the surface. Before treatment by the chemicals, the filters, even after a wash, were so clogged with mud that when the filter water was allowed to drain down below the surface of the sand, small pools of water remained on the surface on account of its inability to penetrate the mud layer.

When the filters were first installed, a sample of filter sand was submitted to and approved by the State Health Department. This sand was used to fill filters No. 1 and 3 and part of No. 2. The remainder of the sand supplied for filter No. 2 was not submitted and was much finer than the first lot. This filter, therefore, clogged more rapidly than the others. It was selected as the one on which the washing experiment should first be tried. The area of each filter is 190 square feet. For this amount, Mr. Green at Little Falls had found that about 175 pounds of caustic soda and about four times that amount of soda ash were required at his plant. In the work at Salem, about 175 pounds of caustic soda and from 250 to 300 pounds of soda ash were used. Laboratory tests might have shown that a greater ratio would have been desirable, but facilities for making the necessary tests were not available.

Procedure

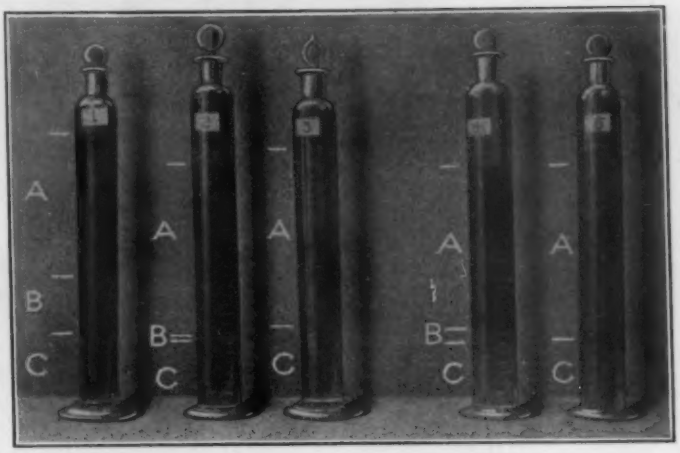
Prior to the time of starting the washing process, a grid of ¾-inch pipes with small perforations at 6-inch intervals was placed over the surface of the sand, resting on the wash-water troughs. A barrel with the bung removed was placed on the concrete sidewall of the filter for use in dissolving the caustic soda and soda ash. A 1-inch steam line was connected to the filter effluent manifold, the grid above the filter and the barrel. The connections are shown in the accompanying diagram. The filter had been thoroughly washed with water, and then water was allowed to flow over it to a depth of about 4 inches above the grid. The steam was then turned on. The entire amount of commercial, fused caustic soda was placed in the barrel, and water was added until the level of the bung-hole was reached. Then the water was cut down so that just a trickle was coming out steadily, and the steam was turned on. As the caustic was taken into solution, it was carried down into the water on top of the filter; about one hour was required to complete the process. Soda ash was added in the same way, except that it was necessary to keep stirring it. The dissolving and addition of soda ash required about two hours.

When the addition of the solutions had been completed, the water on top of the filter was thoroughly stirred with paddles. After this, the filter-to-waste valve was opened and the water was drawn down about a foot so as to obtain contact of the chemicals with the sand in the filter. Later in the process, it was drawn down about a foot more. After each period of withdrawal, water was admitted to the surface of the filter to cover the grid to a depth of 4 inches. After 12 hours of heating, the water in the filter had reached a temperature of about 175 degrees F.

Air Agitation Is Tried

During the washing process, it was suggested that an agitation of the entire sand and water mass, such as obtained by an air wash, would be beneficial. The Superintendent mentioned that an air-compressor owned by the municipality could be set up at the plant, and he was asked to install it. The air-compressor was of the gasoline motor-driven type used by contractors for work requiring a semi-portable machine. Its 1½-inch discharge was connected to the filter effluent manifold and it was operated at a pressure of from 5 to 10 pounds for a period of about 15 minutes. It was noted that the agitation was very complete near the outlet end of the manifold but was practically negligible at the far end of the filter. This was probably due to the fact that the holes in the manifold were too large for the air pres-

sure and permitted escape over too small an area. This air agitation was given about 20 hours after the start of the treatment and again just before the end of the process.



SAMPLES SHOWING SAND BEFORE AND AFTER CLEANING

Results

After the solution had been kept in the filter at a temperature of 175 degrees F. for about 40 hours, the filter was thoroughly washed several times, over 50,000 gallons of filtered water being used. Careful observation showed a considerable improvement in the appearance of the sand, and the operators have since stated that the filter could be run longer after this treatment than at any other time since it was first placed in operation. The results were encouraging, and it was decided to wash another filter by the same method.

Accurate Observations on Second Trial

Filter No. 3 was next selected and preparations for the wash were made in a manner similar to that used for No. 2. In collecting samples of the sand, a very prominent line of demarcation of the mud layer on top was noticed, and it was suggested that this be removed by hand before starting the washing process. Accordingly, about ½- to ¾-inch of the top layers, including both mud and sand, was removed with a shovel. The total amount of material removed weighed about 400 pounds, of which about 250 pounds was mud. The moisture content of the material was about 50 per cent.

The washing process and the amount of chemicals used were similar to those descried above, except that the air-compressor was not available. After the sand had become heated, it was allowed to remain with the chemicals on it for a period of about 80 hours, after which it was thoroughly washed several times, using over 100,000 gallons of filtered water.

Samples of sand were taken after the washing process, and found to be remarkably clean. It was noted, however, that in the sections of the filter where the least wash-water velocity existed, the mud piled up in well-defined areas to a depth of about 1 inch. An attempt was made to remove this by washing the filter with a high-velocity wash water, but this method was unsuccessful. It was, therefore, necessary to remove the mud by hand, which was relatively easy, as it existed only in sections and could be readily taken up with a shovel.

The picture accompanying this article shows the condition of the sand before and after washing. In each cylinder a sample of 100 grams of dry material was taken and made up to 250 c.c. with distilled water. The mixtures were shaken thoroughly and the difference in the mud content is shown by the lines separating the water, mud and sand.

Sample No. 1 from the top of the sand to a depth of 2½ inches taken before cleaning contained 10.4 per cent of mud, dry weight. Sample No. 2 taken from a muddy section at the top of the sand after cleaning showed 2.15 per cent mud. Sample No. 3 from a clean section at the top of the sand after cleaning showed 0.5 per cent mud. Sample No. 4 taken 4 inches below the surface before cleaning showed 3.2 per cent, and sample No. 5, similarly taken after cleaning, showed 0.65 per cent.

Conclusion

It is doubtful if better results could be obtained by removing the sand and cleaning it by the more common methods of washing. It is also probable that the chemical method is less expensive and easier, as it requires less labor and less time.

Liquid chlorine, the universal protector of municipal water-supplies, is now administered for curing colds and influenza by inhaling minute quantities under suitable control.

Safeguarding Night Traffic by Proper Street Lighting

The Community Must Hold Itself Directly Responsible for Accidents Caused by Inadequately Lighted Streets

By O. F. Haas

HAVE you ever stopped to think that the coming of night virtually places blindfolds on automobile drivers and pedestrians? Not only is it more difficult to see objects after dark, but experiments have shown that it actually requires an appreciably longer time to see under a dim light than under bright illumination. When viewed from this angle, it can readily be understood why over 17 per cent of night traffic accidents are directly attributable to lack of adequate street illumination. The following discussion takes up the various types of common accidents which may be prevented by good street lighting:

Driver runs into obstruction or break in pavement.—Street lighting, especially on the thoroughfares, should reveal all small breaks in the pavement or obstructions in the street. These requirements necessitate a fairly uniform distribution of light on the street surface, against which the obstructions and dangerous faults are seen either as shadows, or breaks in the sheen of streets with a polished surface or of pavements which are wet.

Driver strikes pedestrian stepping into street or waiting in street for street-car.—The spacing of lamps should be close enough so that there will be no dark areas between units. On wide streets satisfactory results can be obtained by locating lamps on both sides of the street.

Driver collides with another machine or street-car on entering thoroughfare from side street.—On account of the additional traffic, the lighting requirements of thoroughfares are more rigid than those of the side streets leading into the thoroughfares. The thoroughfare system should be so designed that the crossings are especially well illuminated through a judicious placement of lamps. This increased amount of illumination at once indicates to the driver that he is nearing a main artery of travel and warns him to be cautious.

Driver coming into thoroughfare from side street strikes pedestrian crossing side street.—The likelihood of this type of accident is avoided by the same treatment of the lighting system as outlined in the paragraph above. A high-powered lamp at the head of the street not only warns the driver to proceed cautiously, but furnishes a bright spot of light underneath the lamp against which a pedestrian is seen in silhouette.

Driver overruns at dead-end or turn.—A lamp of adequate power placed at the head of the dead-end street or on the outside of the turn indicates the curb and surroundings. At particularly dangerous spots where the traffic is heavy, warning beacons may be used to advantage. It seems logical that a community must hold itself directly responsible for night accidents such as the one described in the following extract from a recent newspaper.

> *Struck by Four Cars, Finally Picked Up Dead*
>
> An unidentified man between 65 and 68 was struck by the fender of an automobile as he attempted to cross ..... Ave. N.E. at East 33rd Street. The driver pulled up to the curb to give aid. Before he reached the victim, three automobiles had passed over the figure lying on the pavement, apparently without seeing it.

It is not an uncommon experience, particularly on a dark, rainy night, for an automobile driver on a heavy-traffic street to discover a pedestrian within a few inches of his automobile fender; a slight change in the direction of the car would have caused an accident. All too frequently the pedestrian fails to realize the danger, because he thinks that he is as clearly visible to the driver as the approaching car is to him. Bright automobile headlights against a dark background cannot be mistaken, but such is not the case with dark clothing against an equally dark background.

Automobile accidents exceeded a toll of 16,000 lives in 1923. The effectiveness of police regulations is doubtless increasing, but these can only take conditions as they are and, by education and punishment, make the best of a bad situation. Adequate street lighting, however, strikes directly at the cause—the condition which creates the hazards of night driving. Street lighting may be likened to the widening of pavements or the construction of new thoroughfares, for it allows traffic to flow forward with speed and increased safety.

The Work of a Suburban Sanitary Commission

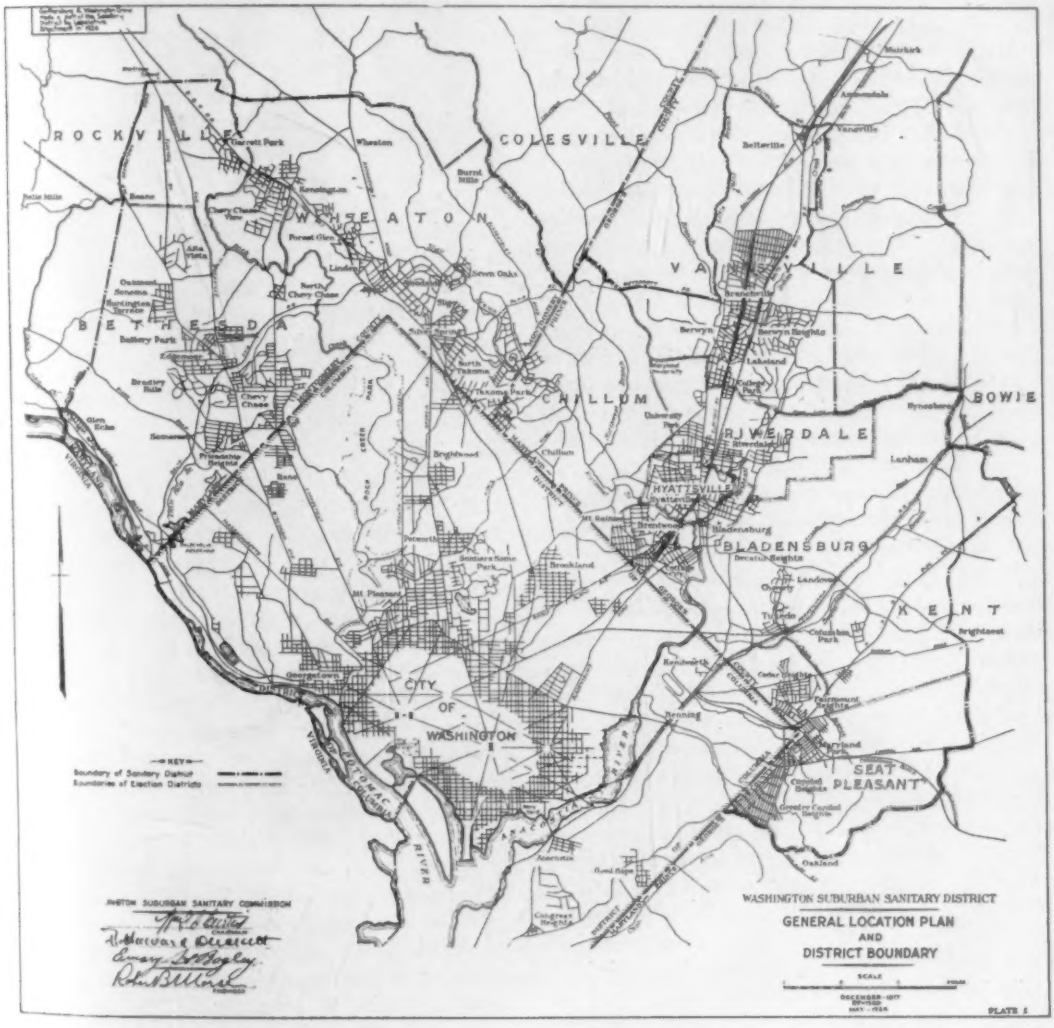
By Robert B. Morse

Chief Engineer, Washington Suburban Sanitary District, Hyattsville, Md.

MANY things may be accomplished more readily and economically by cooperation and a pooling of resources—a statement no less true when applied to the public service than to private endeavor. Especially advantageous is joint action of communities with respect to water-supply, sewage disposal, street planning and other matters that affect broad areas and whose proper solution often must depend upon natural and developmental considerations rather than political boundaries.

Near large cities, smaller communities are generally grouped. Sometimes much of a suburban area is under county government alone. This is the case in those sections of Maryland bordering on the District of Columbia. Here we find small towns, so-called taxing districts, and unincorporated villages, here huddled together, there separated by stretches of rural territory at any moment subject to real estate operations.

Only if natural conditions happen to be decidedly favorable can municipalities in such a neighborhood maintain satisfactory individual water and sewerage systems; but not even



this may be said of the unincorporated areas. Rare indeed is the county government that can or will provide these systems.

More than a dozen years ago the need for collective action near Washington was becoming manifest. Sanitation was at a low ebb. Growing towns were having difficulty in developing adequate and safe sources of water-supply; real estate operators in unincorporated areas were constructing hopelessly inferior community water and sewerage systems; streams were becoming fouled. Just one hope appeared—that of developing comprehensive projects for the whole suburban section.

No large water company was operating in the vicinity. So it became evident that the desired water-supply as well as the sewerage project could be put into effect only by a central public body. This alone appeared definite. Other questions were not so easy to answer. Should this body build and operate the supply and purification works, deliver water through its own main feeders to the various municipal systems and construct general distributing mains only in unincorporated sections? Ought it to install only the trunk sewers and treatment works, together with the minor collecting sewers in communities outside of municipal boundaries? Or might it not be simpler and more economical to take over all municipal and private water and sewerage systems, merging them into a vast, coordinate unit? How might the funds be provided for so large an undertaking? Could a plan be formulated under which, during a period of excessive costs, the great expense might be met without undue burden on this area, none too populous or wealthy, but with prospect of rapid growth? Must the founding and continuation of this necessary public work be subject to the affirmation of an electorate with, we may assume, not too broad a vision?

These, and many minor questions, were thoroughly considered by a commission of three citizens of the affected area in Montgomery and Prince George's Counties. This commission was created by an act of the Maryland Legislature of 1916 for the purpose of studying the problem. These same gentlemen, and others, appointed by a former governor, had, in 1914 and again in 1916, submitted bills to the Legislatures of those years comprehending the establishment of an organized sanitary district. Apparently, the plan was ahead of the times. In 1918, however, the bill prepared by the Commission of 1916 was enacted into law, and the Washington Suburban Sanitary District became an established fact.

Powers and Duties of the Commission

The Sanitary District, lying partly in Montgomery and partly in Prince George's County, Maryland, has an area of 95 square miles and a present population of more than 40,000. The taxable basis is approximately $45,000,000. The population has doubled since 1910 and the taxable basis since 1918.

The administrative body consists of a commission of three members, one appointed by the County Commissioners of each county, upon recommendation of the State Board of Health, and one by the Governor of the state. The term of office is four years. The Commission is a body corporate, for the purpose of establishing and operating water and sewerage systems throughout the Sanitary District. It has power of condemnation. It issues its own bonds, prescribes the amount of annual tax to be collected by the two boards of county commissioners, and levies and collects its own front-foot assessments, said tax and assessment covering fixed charges on the bonds. It fixes and collects service rates to meet maintenance and operating costs.

The Commission also is required to issue permits for and to inspect all plumbing. So great has been the demand for extension of the water and sewerage service that inside plumbing has thus far escaped attention. Plumbing regulations are, however, about to be issued and organized inspection undertaken.

Collection and disposal of garbage and refuse, wherever warranted, constitute another of the Commission's duties. The date of beginning, however, is left to the discretion of the Commission, and inauguration of the service has been deferred until a more opportune time.

A short period of operation disclosed the fact that it would be impossible to design and construct thoroughly satisfactory and economical water and sewerage systems without supervision over street alignment and grades. Some of the municipalities had exercised control of an indifferent sort over their streets, but practically everywhere a developer could do as he pleased. There had resulted the utmost confusion in street development. A section having great possibilities was being spoiled through lack of coordinated planning. No thought was given to a major street system, parks or parkways. It was a question only of—How many lots of a certain size can I get out of my property? There was no fitting of streets to topography, little or no variation of street widths, no attention to what one's neighbor might need in the way of outlets, slight thought of economy in the matter of

drainage or grading—just a dismal monotony of dead-end, broken-back streets, many with such gradients that only a goat could climb them with ease, and all 30, 40, sometimes 50, but rarely 60 feet wide, depending upon the whim of the developer.

Out of it all, though opposed most sharply, there originated, in 1922, a system of street control. So it happens that the Commission now has to perform the additional work attendant upon mapping out a street system, approving all subdivision plants before being recorded, and establishing street grades outside the boundaries of municipalities.

A P. & H. TRENCHING MACHINE WORKING IN HYATTSVILLE, MD.

Financing the Project

Except for the fundamental questions decided so as to result in the prosecution of the work unhampered by any form of referendum, and in a single ownership of all water and sewer lines throughout the District, the most important matter before those drafting the original legislation was the evolution of a feasible and equitable plan under which the project might be financed without public burden.

If any such plan could be devised, manifestly it would have to be based upon the principle of allocating, as nearly as practicable, the expense to the public and to each individual in proportion to the benefit received. It is hardly feasible, nor is it necessary, to classify benefits with scientific precision. The most technically accurate scheme would require tempering to satisfy local conditions and prejudices. We can hope only for a plan of meeting costs which recognizes the general principles involved.

Broadly speaking, three grades of economic benefit are derived from the construction and operation of either a water or a sewer system. The man who owns property in a community or district in which there is a system gains some advantage even though his land is not so located that it can be served at once. Property along a water-main or sewer is benefited much more, whether improved or unimproved. The greatest advantage, naturally, falls to the person who actually uses the service. The owner of the first-mentioned property, therefore, should pay least, and the user of the service most. The problem is resolved into one of accomplishing this end in a logical manner.

Funds are obtainable from three sources—taxes, special assessment, and service rates. Unless a system of zone taxation is employed, the tax rate should bear only that part of the expenditure which represents benefit independent of location. Special assessments must cover the cost of providing those elements of the system giving locational benefit. We shall not stray far from scientific accuracy if the amounts collected from taxes and special assessments are made sufficient to meet most of the construction costs, that is, the fixed charges on the bonds. Rates for service, then, need not much more than pay the expense of maintenance and operation.

It would be theoretically correct to charge the tax rate with at least that proportion of the cost of reservoirs, pumping-plants, purification and treatment works, and main feeders and collectors, which is made necessary through provision for future growth of the territory. This sum is spent for the benefit of all property. The remainder of the capital expenditure for the main elements of water and sewerage systems may be met, perhaps with almost equal justice, by special assessments on the property abutting water or sewer lines, or by service rates. The tax levy should include, also, much of the cost of general studies and surveys which form a basis for future operations.

The property adjacent to water-mains and sewers ought to bear the expense of the distributing system and the lateral sewers. There appears to be no more equitable way of doing this than by front-foot assessment. This benefit charge should fall equally on improved and unimproved lots, for it costs as much per foot to lay a pipe in front of one as the other. The rate should be uniform for a particular class of property, regardless of variable costs of work in different neighborhoods.

House connections are equitably chargeable to the property served. Payments should be equalized for connections of a given size, because the owner has no voice concerning the location of the main pipe. He ought not to be penalized if his service is longer than the average, nor yet receive the benefit if it is shorter.

The plan of financing the operations of the Washington Suburban Sanitary District was worked out along these lines. With a few additions and modifications found advantageous by experience, it has proved a practical scheme for executing the work and has not been burdensome, in spite of the era of high costs.

In a project of this kind, ever growing and spreading, any endeavor to determine ahead the cost of those parts of the projected systems properly chargeable to the tax rate would have been as futile as it was unnecessary. The amounts required to pay interest and sinking fund charges on the bonds issued from time to time were met by the easier method of fixing the front-foot assessments first and then obtaining the balance through general taxes. The fundamental philosophy, nevertheless, was ever in mind. So much of the District's area is still in a rural state, and will be so far removed from early extensions of the systems, that it has seemed advisable and just to keep the tax down to a low figure. However, the supply mains and trunk sewers must be so long, to serve the many scattered communities, and all main elements of the systems require such an excess of capacity, in order to be adequate for a large increase in population, that rates for service soon must bear that part of the capital cost of the above which is not allocated to the tax rate. Front-foot assessments will be sufficiently large if they cover the expenditure for minor piping.

It is the practice in most places to make front-foot assessments for an improvement payable in one sum, or in several annual installments, the number generally not exceeding ten. If bonds are issued to cover the cost of the work, this course imposes an unnecessary burden. Why not levy small assessments during the whole life of the bonds? The front-foot assessment thus becomes in fact a small additional tax, but one which is a fair measure of the benefit received. This plan is followed in the Washington Suburban Sanitary District. As its bonds are issued for a term of 50 years, the annual payments are very small. This is the principal reason for the financial practicability of such a large project in an area of comparatively limited wealth. The assessment may be met in one sum when the pipe line is installed, or it may be extinguished on the present worth basis at any later date. The number so paid up, however, is so small as to be negligible.

Under the Commission's financial plan it is merely necessary at any time to know the taxable basis of the District, the number of assessable front feet, and the fixed charges for the ensuing year on all outstanding bonds. The assessments and tax then may be proportioned as desired.

The schedule of charges at present is as follows:

Tax 5 cents per $100
Front-foot assessment, annually, water 10 cents, sewer 12 cents
Water connection to property line, ¾-inch, $30
Sewer connection to property line, $30
Service charge, ⅝-inch meter, $4 per year
Water consumption, first 25,000 gallons semi-annually, 15 cents per 1,000 gallons

For the purpose of assessment, property is classified into business, subdivision, small acreage and agricultural. The figures mentioned above are the basic ones for all except the business classification, which is assessed at a higher rate. Small acreage and agricultural property are subject to certain modifying rules. On long frontages (in excess of 150 feet for subdivision property) the unit price is radically decreased. Corner lots in subdivisions are assessed only on the front. The depth of a lot has no influence on the assessment.

The charges for water and sewer connections may be paid in one sum, or in four annual installments, the deferred payments bearing interest at 6 per cent. Water connections larger than ¾-inch in diameter are furnished at increased cost.

All water connections are metered. The service charge covers interest and depreciation on the meter and those elements of maintenance and operation that are independent of the amount of water furnished, that is, unregistered water, reading and billing. The service charge for meters larger than ⅝-inch is graded according to the size of meter.

Water consumption charges include the cost of maintenance and operation of the sewerage system as well as all of the expense of maintaining and operating the water system except that part appearing in the service charge. This is equitable and convenient. The charge is graded down to 8 cents per 1,000 gallons for large quantities of water.

Consider, now, the annual expense of the following representative cases:

1. Property assessed at $5,000, and not on a water or sewer line
2. Unimproved lot, with 50-foot frontage,

assessed at $500, and on a street having a water pipe and a sewer

3. Residence on a 50-foot lot, assessed at $5,000, connected to water and sewer lines, and using 50,000 gallons of water annually

The first property would pay $2.50 each year, the second $11.25, and the third $25. The last owner would expend, also, a total of $60 for connections.

Even if the third property had a frontage of 100 feet, in which case the charge would be $36, the owner would pay for complete water and sewerage service, including fire protection, hardly more than for either gas or electricity, and perhaps not as much.

It is obvious that the Commission's plan grades payments in accordance with benefit received, and that it is not burdensome to the ordinary holding.

Difficulties Encountered

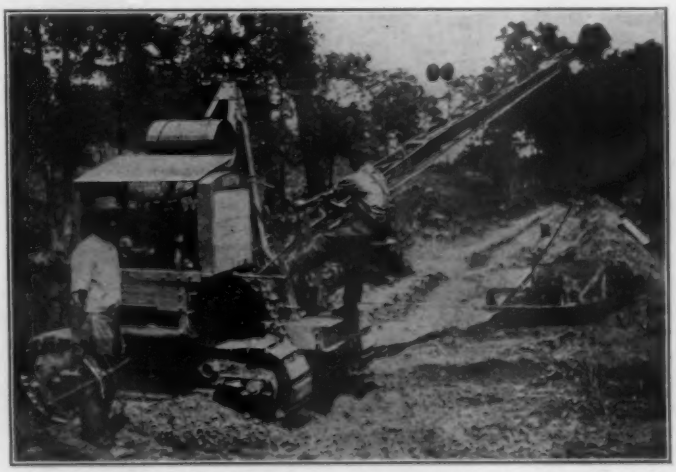
Established municipal governments are often beset with difficulties when installing water and sewerage systems. Consider, then, a brand-new scheme of organization, an untried financial plan, an area, more than a third larger than the District of Columbia, lying in two counties and comprising numerous small municipalities and a large amount of unincorporated territory. Is there any wonder that the Commission has had other than constructional troubles in getting the project firmly established? It was a "foreign" organization, so to speak. It was "more powerful than the king," quoting a campaign speech. To incorporate all existing systems into one covering the whole area required broad powers, but comparison would show that they are no more sumptuary than those possessed by most municipal governments.

As the plan of operation has become better understood and the stimulation afforded to development becomes evident, opposition has diminished. Protests about street conditions and taste of water are still with us, but it augurs well that they are no more frequent than those concerning the delay in extending service to one's property.

In addition to external difficulties produced by the novelty of the project, the Commission has been compelled to overcome many other obstacles not generally encountered by a single municipality of equal population. These relate not so much to conditions surrounding construction as to procedure in a somewhat unusual situation. Administration offices in Washington and engineering offices in the Sanitary District, a distance of twenty miles or more apart, and lack of belt line transportation and circumferential highways, do not facilitate the work of the Commission nor its engineering staff.

An important problem has been that of providing here and there an immediately necessary element or link that would later expand into a coordinated system adequate for a population much greater than that of to-day. No considerable mistake must be made. The part now built must perform its function in the future. A pipe may be supplemented by a larger one following a different route along a highway not yet opened, a piece of machinery may be moved to another and permanent location, a dam may be raised, but elimination must be minimized. Naturally, however, many of the inadequate municipal water-supplies, pumping-stations, sewage treatment works, small mains and improperly constructed sewers have been abandoned, and more of them will be. Also, a few small temporary water pipes have been purposely laid in streets that eventually must be the routes of main arteries.

Perhaps the greatest problem of all has been the difficulty of meeting the insistent demand for extension of service. The attempt to do so, and the necessity of keeping down capital expenditure, have delayed construction of the permanent water-supply and purification works and also the trunk sewers. Temporary plants, progresssively installed, are now supplying the rapidly increasing water consumption.



AN AUSTIN BACK-FILLER AT WORK AT HYATTSVILLE, MD.

Work Completed and Projected

Bonds issued or assumed by the Commission now amount to about $3,200,000. At the end of 1923, the Commission owned approximately 225 miles of water-mains and sewers. Almost exactly half of this mileage was built in the last four years. Lines purchased or otherwise acquired comprise the remainder.

Temporary water filtration plants and pumping-stations have been erected at Hyattsville and Burnt Mills, with daily capacities of 1,000,000 and 2,500,000 gallons, respectively. The small works formerly owned by the town of Takoma Park have been increased in capacity from 300,000 to more than 1,000,000 gallons per 24 hours. The supply systems at Takoma Park and Hyattsville will have soon served their purpose, except for reserve, and the Burnt Mills plant will have its place taken, within a few years, by permanent purification and pumping works of much larger size.

An impounding reservoir, with a capacity of more than two billion gallons, and located on Northwest Branch, will form the permanent source of supply for the District, or a part of it. This stream has a drainage area of about 27 square miles at the site of the proposed dam. Whenever necessary, it will be economically feasible to store the water of the Patuxent River, a much larger stream, and convey it to the Northwest Branch reservoir, a distance of five or six miles. Or, if the District expands to the northeast, as seems probable, the Patuxent River water may be filtered near Laurel and enter the main distribution system at that point. Already the District has been extended to the northwest so as to include the town of Gaithersburg, seven miles or more from the original boundary. This makes probable the early use of Seneca Creek as well as Northwest Branch.

Disposition of part of the Sanitary District's sewage will be through the District of Columbia trunk lines, as soon as these have been extended to the common boundary line. Sewage originating from the easterly section of the District, however, probably will be treated near Bladensburg and discharged into the Anacostia River, although it is possible that this also may enter the District of Columbia system.

Organization of Force

Accounting, assessing, meter reading, billing, etc., are attended to by the administrative office. The engineering work is carried out by three departments—those of headquarters, construction, and maintenance and operation. From 50 to 60 men, including the chief engineer, deputy chief engineer and three department engineers, constitute the engineering personnel. The number of plant attendants, foremen, skilled and unskilled laborers, varies with the season. At present it is something over 300.

It has been found far more satisfactory, and at least as economical, to perform much of the work by day labor, particularly the installation of water-mains. The amount thus accomplished is constantly increasing. Out of about 39 miles of water mains and sewers laid in 1923, nearly 24 miles were built by the Commission's forces. All house connections, which average about 150 per month, are now installed by day labor.

Conclusion

The Commission's work seems to be of ever widening scope. The main elements of its projected systems have not been provided yet, nor even all immediate requirements satisfied. Its efforts, nevertheless, have made feasible a development of the area much more rapid than would have been possible without them.

The plan under which the Washington Suburban Sanitary District was established and is operating has served as an example for the foundation of two similar areas near Baltimore—the Anne Arundel County Sanitary District, organized in 1922, and the Baltimore County Metropolitan District, now about to start operation. Several others have been under discussion, and a number of towns in Maryland have had legislation enacted providing for water-supply and sewerage work to be done under a similar financial plan. From present indications, such districts as the one now existing near Washington will spring up in various sections of Maryland, because the type of organization is a feasible one; and the Commission's financial plan will become widely used by single municipalities in that state, because under it the expense of water and sewerage systems may be met equitably and without burden to the budget of the district or to the taxpayer.

ACKNOWLEDGMENT.—From a paper read before the American Chemical Society.

A POLICEWOMAN'S AMBITION

Every city is coming into line with a full quota of policewomen. That is as it should be. There is a place for them in every community, no matter how small. One of the most capable policewomen in the country recently said, "We do not wish to usurp the place of the policeman. Rather it is our aim and object to become to him what the trained nurse is to the doctor." An unselfish, manlike attitude that is commendable!

THE POLICE JOURNAL.

Welfare Week-Ends—A Device in Community Organization

By Earl Kilpatrick

Dean, Extension Division, University of Oregon

TWO "Welfare Week-End" programs, one in Oregon City in January of this year and one at Pendleton in March, are not enough from which to judge the full possibilities of the device. The cordial cooperation of eight state agencies in a joint educational effort appears to us to have been a distinct achievement. The enthusiastic repetition of that educational endeavor in a second community seems still more significant. Eagerness on the part of all these agencies to continue the cooperative experiment in still other communities next fall encourages us to believe that there is much vitality and value in the idea. The same impression comes from the citizens of Oregon City and Pendleton who attended the sessions.

The state agencies participating in this new type of community institute are the Oregon State Board of Health, the Oregon Child Welfare Commission, the State Industrial Accident Commission, the Tuberculosis Association of Oregon, the Medical School of the University of Oregon, the Industrial Welfare Commission of Oregon, the Oregon Board of Inspectors of Child Labor and the Oregon Social Hygiene Society.

At Oregon City these state agencies had the local cooperation of the city and county schools, the city and county Parent-Teacher Associations, the Woman's Club, the Chamber of Commerce, the Kiwanis Club, the County Health Association, and the newspapers. At Pendleton the cooperating local agencies included the County Public Health Association, the American Red Cross, the city and county schools, the city and county Parent-Teacher Associations, the Council of Women's Clubs, the Pendleton Commercial Association, the County Dental Association, the Ministerial Association, the County Court, the Rotary Club, the Exchange Club, the local physicians and the newspapers.

The Pendleton program opened on a Friday noon with a public luncheon arranged by a committee of the Pendleton Commercial Association. On Friday afternoon presentations were by the State Board of Health and the Social Hygiene Society. Friday evening was given over to the Industrial Welfare, Child Labor and Industrial Accident Commissions. Saturday morning was kept free for three clinics—well baby, tuberculosis and orthopedic. Saturday afternoon was assigned to the Shepard-Towner work of the State Board of Health, the hospital service for sick and crippled children of the Medical School, and the Tuberculosis Association. On Saturday evening the Child Welfare Commission explained the state's interest in delinquent and dependent children, and the director of the School of Social Work summarized the results of the sessions. Exhibits were installed in the meeting-place by all of the agencies participating.

A New Type of Community Institute

The "Welfare Week-End," as it is being developed in Oregon, has for its chief purpose the exposition in communities of the facilities and services available from state agencies. It is intended to be a step in the direction of intelligent and proportionate, rather than accidental and haphazard, community organization. Briefly described, it consists of a series of addresses, clinics and exhibits, running through two days, by which the state agencies for health and welfare, every one speaking for itself, build up a comprehensive picture of the whole problem of welfare in the community and indicate solutions.

The idea of these welfare week-ends was first proposed by Margaret D. Creech, Assistant Director of the Portland School of Social Work of the University of Oregon. The name was suggested by Dr. Philip A. Parsons, Director of the same school. Miss Creech asked that the plan be tried through the extension service of the University, and supported her request with the following argument:

"The state of Oregon maintains many agencies for the maintenance and improvement of the health and welfare of its people. These agencies have extensive programs and employ many experts. Every community in the state has frequent need for the services of all of them, need which at pres-

ent is often imperfectly realized. Some of these agencies employ field representatives to make contacts with local communities. Frequently the nature and extent of work undertaken in a community are more directly dependent upon the activity of such field representatives than upon the initiative of citizens of the community. This makes for poorly proportioned development of health and welfare work and leads to neglect in those fields of activity which are not vigorously promoted by some one from the outside. Clearly there is need for occasional unified and comprehensive presentation of the problems of health and welfare in the light of the actual conditions of the individual community, which will assist the leaders in the community to plan the best use of state agencies in meeting local needs. Since no operative agency can well take the lead in coordinating the others, and since practically all of these agencies are already cooperating through service on the faculty of our School of Social Work, it occurs to me that the University might well arrange such programs.

"I suggest therefore that the Extension Division undertake to promote week-end programs, perhaps two days in length, in several communities, in which the representatives of the state agencies for health and welfare will be asked to participate through addresses, clinics and exhibits, with the understanding that their efforts are to be directed toward two definite ends:

"First, the best possible statement to the people of each community by the experts of each agency of the status in that community of the problems for the solution of which that agency exists, and

"Secondly, a clear statement of the facilities which that agency can make available to the people of that community for dealing with those problems."

Responding to this request, the Extension Division outlined the plan to a group of representative citizens of Oregon City, fifteen miles from Portland, and received a cordial invitation to arrange the first Welfare Week-End program in that community. The idea was then presented to the executive officers of the several state agencies. Without exception they were interested at once and expressed the wish to cooperate. The second program in Pendleton was more than 200 miles from the home offices of the agencies and, thanks to excellent local cooperation, was conducted with no more difficulty than the first one, which was only half an hour from Portland. Invitations now in hand for future programs have come from Bend, Astoria, Medford, Eugene and Marshfield.

Items of Encouragement and Guidance

In the course of the preparation and carrying out of the first two series of programs, several points became clear which serve to encourage and guide further experimentation. They may be summarized as follows:

Expense.—Such a series of programs involves practically no additional expense to state or community. The several agencies are under obligation to visit the communities, anyway, with service and promotion. It costs them no more to do so in such cooperative fashion, and the expense is met out of their regular allowances for travel. Places for meetings, clinics and exhibits are readily secured without cost.

Value to Agencies.—Such an experience of cooperation has much value for the cooperating agencies. It has been understood in the progress of this experiment that the representatives of every state agency would attend the meetings addressed by the representatives of the other agencies. There have been, as a result, many striking examples of improved understanding of the work of one agency by another, leading to immediate and specific cooperation. Luncheon meetings of agency representatives in Portland following each program showed distinct development of group morale among persons who had formerly not been accustomed to cooperate closely with one another.

Intrinsic Value of Services.—The addresses were of excellent quality and would have been worth while quite aside from the general plan. Some agencies made preliminary surveys of the counties in order to be able to speak with more authority as to local conditions. The clinics justified themselves. Many people in both towns were heard to say that the definite result of securing hospitalization of a number of crippled children for the correction of their deformities was enough to justify all the time and effort spent upon the whole affair. The exhibits would have seemed worth while, in and of themselves. It thus appears that whatever community organization values were attained may be considered additional benefits derived from a series of meetings which carried their own justification in specific service.

Attendance.—At none of the sessions was attendance so large as might conceivably have been secured by comparable publicity for a single session by one agency alone. The effort was to secure attendance throughout the sessions of leaders. This effort was measurably successful. Those who attended were quite faithful in following the meetings through from first to last and seemed to catch the central idea of the desirability of a unified, comprehensive community program. They were, to a considerable extent, members of boards of directors and persons otherwise influential in determining the policies of community agencies.

Rural Cooperation.—Through the county press and through county-wide organizations like the rural schools, the Parent-Teacher Association, the Red Cross, and the county organization of the Tuberculosis Association, news of the meeting was diffused throughout the counties and there was representative attendance, even from remote parts of the counties.

Local Auspices.—No formal local auspices were thought necessary or desirable, but all the local persons and agencies interested cooperated actively in promoting interest and attendance. An informal and temporary local committee cooperated in making arrangements for meeting-places, in securing local publicity and in arranging local participation on the program. Thus the community was left with much information but without any formal attempt at comprehensive organization for purposes of coordination. To some, this may seem unduly conservative procedure, but we felt that lack of demonstration up to the present time of the uniform utility of any set device for local community organization dictated the wisdom of

leaving initiative entirely in the hands of the local community.

The University's Function.—The function of the Extension Division and of the School of Social Work was conceived to be to suggest the plan, to arrange the program, to assist with the publicity and to make occasional speeches showing transitions and relationships, but in no way to make specific suggestions to any agency as to the matter which its representatives should present. Each agency therefore stated the community need from the point of view of its own contacts and its own facilities. The result was surprisingly unified. Various representatives of participating agencies helped in the advance work for the second meeting, but all were agreed that the coordinated program could hardly have been suggested or promoted by any one of the operative agencies. We agree, but we believe that such meetings might well be arranged in this or other states by any other detached state agency of education or social service or in any community by a committee of interested citizens.

Closer Coordination.—At the beginning there was some thought of carrying a single coordinating thread, such as the discussion of a hypothetical problem family, throughout the sessions, but this was abandoned as impracticable. We are still searching for some such simple unifying idea, which will enable us to dramatize, as it were, the whole presentation. We are, however, encouraged by the extent to which the abstract idea at the basis of the plan has been apprehended, both by agencies and by citizens.

The University of Oregon and all of the agencies which are cooperating in this experiment will be much pleased to hear of similar ventures elsewhere, especially if the reports may indicate the degree of success attained in comprehensive presentation of local problems and of state facilities, and even more importantly any indication that the local communities have profited by such presentation to improve their intelligent use of such facilities.

Survey of Social and Living Conditions Essential to Wise City Planning

WHAT has a survey of social and living conditions to do with a city or regional plan? This question was answered at the recent Town Hall meeting of the Committee on Regional Plan of New York and Its Environs, by Lawson Purdy, General Director of the Charity Organization Society of New York, in a paper from which the following paragraphs are abstracted:

"City planning means the public regulation of land, public and private. For the lack of such regulation we have wasted public money on building streets and sewers before they were needed, on making many streets too wide and others too narrow, on widening streets at great expense and destroying valuable buildings in the process. After population was congested, we have spent great sums on the acquisition of land for parks and recreation grounds and schools, and have not been able to devote sufficient land to such purposes. Because of the invasion of residential areas by industry and trade, we have destroyed good dwelling houses and rendered good school buildings useless. All this waste of property, public and private, is due to failure to plan in advance and to regulate the use of land by appropriate governmental action.

"However desirable some regulation might appear, it cannot be arbitrary, but must take account of the habits and desires of the people; hence the necessity for a study of the trend of housing development in the past in order to determine a plan for the future.

"By the use of public records, checked by personal inspection, 55 sections of the city of New York have been studied to determine the trend of housing development during the last ten years. Such complete public records were not available in the region outside the city of New York, and public records have been supplemented by private records, interviews with well-informed persons, and personal inspection in the case of 242 governmental units in the region around New York.

"The records made show where dwellings are being erected, where single-family houses predominate, where two-family houses are numerous, and where multi-family houses are in demand. Certain tendencies are apparent. Apartment buildings are growing larger and apartments are growing smaller. The guest room is no more. The same tendency appears in the building of single-family dwellings in outlying boroughs and in suburban towns. Houses are smaller; the demand to-day is for houses of five, six, or seven rooms. The small house and a garage have taken the place of the large house and a maid. The advent of the car has made necessary space for a driveway, and the tendency is to use larger lots for small houses. These records will help to determine where through thoroughfares shall be and where the residential streets; where playgrounds shall be bought in advance of the need, and space for parks and public schools and all public buildings. The city planner can make provision for all the public needs of the future and they can be met at a small fraction of what they would cost when population has become dense.

"City planning can make future conditions far better than the past, so that the many millions who will live in this area in the next generation may have far better opportunity to develop all their powers of mind and soul. City planning by city planners will never accomplish this unless in the process the public generally acquires a seeing eye and a willing mind. The eye must be able to see in imagination a wholesome, useful community where each one so uses his own land as not to infringe the equal right of his neighbors to the fullest use of theirs. They must have minds willing to seek their own advantage without injury to others, to protect their neighbors' rights and so protect their own."

A Complete and Well-planned Paving Program

Abstract of Local Publicity to Acquaint Taxpayers with Plans

By C. A. Bingham
City Manager, Lima, Ohio

OF the $2,000,000 worth of street paving built by the city of Lima, Ohio, since the inception of commission-manager government in January, 1922, the Main Street improvement stands foremost as a particularly well-planned piece of work in which more attention was paid to the preliminary work than is customary in most cities. This city of 55,000 population has 3,000 feet of its main business thoroughfare so paved and so arranged as to underground and surface structures as to facilitate the work of the utilities, which paid over $400,000 to help the city in this endeavor. There has been considerable dissension in the last six years as to what material should be used in paving the streets. To instruct the citizens in the numerous details which have been worked out, the following paragraphs were prepared for local publication and are reproduced here not only to show the excellent manner in which this street work has been planned, but also to show municipal officials how one city is reaching its taxpayers with complete, truthful details of proposed construction.

"As the foundation is the most important part of any street, it is well to state first that this is to be of the best concrete and 8 inches thick. All backfilling is specially tamped around and over the structures and all trenches flooded three times at intervals of several weeks, but regardless of whether the trenches have stood one or two winter settlings or whether they were recently installed, a special concrete base will be laid, to a width of 2 feet beyond the edge of the trench, to give support on solid ground. This portion of the foundation will be 12 inches of concrete and will be reinforced and ⅝-inch steel rods placed every 6 inches apart. Additional protection will be secured by sloping this extra depth beyond the 2-foot limits in wedge shape, not only to prevent a crack at its junction with the regular foundation, but also to preclude any settlement. It is also well to mention here that in all trenches over 8 feet deep, heavy side sheathing was left in the trenches and the sides braced with 4- x 6-inch cross-pieces. To the stranger, this may seem extravagant, but it must be remembered that while the southerly end of this street has gravel and sand subsoil in which very little settlement may be expected, the remainder of the work was in a clay which has been found by experience to continue settling for an unusual time unless every precaution is taken.

"Over trenches which were back-filled immediately ahead of the pavement special reinforcement was used, as shown in the accompanying photograph, consisting of 72-pound steel rails 8 feet long, placed every 6 feet across the trench, and a mat of ⅝-inch steel rods wired together 6 inches apart in both directions placed on the base of these rails, and the entire reinforcement encased in 16 inches of concrete.

"This city, in common with many others, had never planned its sewers ahead; and as the city grew, the shallow and inadequate sewers were continually flooding homes and business properties. A comprehensive plan

KOEHRING PAVER WORKING ON MAIN ST., LIMA, OHIO

of relief and intercepting sewers was made, and already about $3,000,000 has been spent in this section of Main Street, starting at the north end with an 18-inch and ending at the river with a 48-inch pipe. At first, we believed the present sewer, which covered a large portion of the street and varied from 18 to 36 inches in size, would suffice, but upon close inspection it was found that the old sewer was too shallow for deep basements, as would be required in the new type of business buildings, and furthermore it ran only half-way up the street, thus leaving the north end without any real sewer outlet, and this condition would have been made worse by the many new catch-basins installed for the new paving. This additional sewer has now been laid at a cost of about $90,000. It is from 16 to 20 feet deep and has had all existing cross-street sewers connected into it. Much of the work has been done in tunnel. The almost impossible conditions under which the work had to be done, on account of the numerous existing lines of various utilities, may be appreciated when we say that over 400 obstructions were encountered in 2,700 feet of main sewer and included everything from the old-fashioned fire cistern to ancient corduroy roads. Practicaly all buildings have been connected to the new sewer.

"Forty extra large and direct-connected catch-basins have been built and are so arranged that, regardless of extreme rainfall, no flooding will be experienced and by careful placing of the basins it will be possible to lay the pavement flush with the sidewalks running lengthways of the street. In crossing the main street itself, the usual 6-inch face of curb will of course show. The curbing is 6- x 18-inch sandstone set in concrete, and all corners will be of granite, and the radii at corners have been increased to 10 feet, which will greatly aid the turning of traffic in or out of side streets, which heretofore has been difficult and slow on account of the short 4-foot corners formerly used.

"The traction company has laid new 7-inch rail of 93-pound section on a 12-inch concrete base, with special work at the Square to obviate the former switching on certain lines. While this rail is a T-rail and does not accommodate paving as well as the girder rail which we endeavored to have specified in the franchise, yet by using a filler block under the head of the rail and a special beveled-edge block along the rail, a neat job should be secured. On account of the heavy trains of freight cars using these tracks at night, some of the city officials believed granite blocks should be used in the car tracks, but the abutting owners evidently believed vitrified brick would stand up under the strain, and these will be used. They are now being shipped, and every car-load is being tested for abrasion and absorption tests before they are allowed to come to Lima. Tests by a paving chemist have also been arranged for on the asphalt, both for the paving itself and for the filler between the bricks. Likewise, all cement will be tested.

"At eight places along this improvement, concrete safety islands will be built next to the car tracks for passengers. These isles will be 7 inches high, 42 inches wide and 25 feet long and will be so arranged that both interurbans loading at the rear and city cars loading at the front may be accommodated without making the islands too long. A concrete post will be built at the end with a red light warning traffic and white light for the platform. Mushroom red traffic lights will be placed in the center of all intersecting streets, and all these lights, as well as the lights in the new combination fire and police signal boxes, will be operated from the boulevard lights by a small invisible transformer. All wooden poles are being removed from Main Street, and the trolley wires will have small iron poles, which, with the boulevard lights, will be the only poles in this section. All light posts will be cleaned and repainted.

"Along each curb, a 6-foot apron or gutter will be built of vitrified brick. This will prevent the oils and greases dropped from parked automobiles, as well as surface water, from rotting the asphalt, which would occur if it were used at the curb. While it is hoped that this apron will never have to be disturbed, yet asphaltic joints will be used, which, should an emergency arise, could be burned out and the pavement removed without breaking it, as would be the result if a cement filler were used. The roadway between these gutters and the tracks will be 17 feet wide on each side. This will be 3-inch sheet asphalt, 1-inch binder and 2-inch top, all of lake asphalt. The contract price for the 3-inch asphalt on 8-inch base is $4.05 per square yard and for 4-inch brick on same foundation $4.50. Brick set on existing base in car tracks, $3.15. This being a repaving job, the city at large will pay one half the cost and the abutting owners the other half, the money being secured from bonds, and owners having ten years to pay in.

"All telephone, telegraph, power and similar ducts have been laid underground across intersecting streets, and properties will be

served from the alleys parallel with Main Street. The gas lines have been renewed on each side of the street and new services installed, these lines being served by a 16-inch high-pressure main. Likewise, a new 16-inch steam heating main has been laid and all services renewed.

"One of the most thorough underground systems in the street is the city water lines. This work was part of the $300,000 program of main extensions and valve and hydrant insertions carried on during the past two years by this department. Formerly, a 16-inch main on the west side of this street served this section. An 8-inch line has now been laid in the east side and in this manner buildings are served from each main, and service lines do not have to cross under the car tracks and be eaten up by electrolysis.

"Furthermore, 27 large three-way hydrants have been placed in this section, and by having hydrants staggered on opposite sides connected to separate mains there need be no hose lines cut by trolleys. Nearly every property has been connected with a new 4-inch gated service, and many valves have been added and lines cross-connected. It was found that the three 16-inch valves in the Square had been broken and rusted shut for many years and the south side of the river was not being fed from the 20-inch main in High Street, but was actually fed by a network of smaller pipes in side streets. These have all been replaced with new valves, and the main line in the bed of the river at Main Street has been joined now where it was cut off and never relaid when the bridge was built several years ago.

"In all the subsurface work done by the various public utilities and city departments, costing in aggregate more than the paving will cost, there has been foremost in everyone's mind the fact that this work was to be of the very best and was to be designed to last and to be of sufficient size to care for this section of the city for at least 20 years, when, based on past growth, Lima will have well over 100,000 population."

Street Maintenance and Cleaning in Pine Bluff, Arkansas

Street Department Very Active in Public Improvements

FOR facility in handling and convenience in accounting, the forces of the Street Department of Pine Bluff, Ark., are divided into several groups. One outfit is equipped with two Fordson tractors, a grading machine and a street-sweeper. This outfit is charged with the duty of grading dirt streets, maintaining the gravel and macadam streets, and sweeping the paved streets. The possibility of covering all the dirt streets and caring for the graveled and macadam streets in any one year is beyond the limit of power of the machines, and when to this the sweeping of the paved streets is added, it can be understood why the Department feels that its work is never completed. Attempt has been made to care for the more important dirt streets and to sweep the pavements when it is most necessary.

In regard to street sweeping, Frank R. Allen, City Engineer, in charge of the Engineering and Street Departments, says that the Department of Street Sweeping is of much greater importance when the weather is warm and dust begins to accumulate in greater quantity. There is one very serious handicap which precludes proper cleaning and causes a great deal of delay and extra cost. This is the increasing practice of parking automobiles on the pavement over night. In a distance of 20 blocks, as many as 33 parked cars have been encountered between 1:00 and 6:00 A. M. In the business section, the leaving of cars over night is necessary and can be taken care of in a special manner, but the use of the residence streets, especially along thoroughfares, is an actual nuisance to the traveling public, and to the residents along the street, and an unnecessary hazard and obstruction in case of fire. It is a subject needing correction and is worthy of serious thought.

Early in 1924, the new "rolling hose line" was placed in service. This is an auxiliary to sweepers and increases the efficiency of the street-cleaning crew. In large measure it answers the purpose of a flusher.

During 1923, the city teams and trucks have hauled over 3,600 loads, or approximately 5,500 cubic yards, of refuse from the paved streets.

A second crew is known as the "sewer crew" and it spends practically all of its time working on the sewers. During 1923, an

PINE STREET, PINE BLUFF, ARK., PAVED WITH 2-INCH TEXACO ASPHALTIC CONCRETE BY THE KAW PAVING COMPANY, OF TOPEKA, KANSAS, IN 1915

average of 1⅔ estoppels per day were reported and cared for. One of the extraordinary causes for trouble was eliminated early in the fall when the wash racks from automobile garages were disconnected from the sanitary sewers. In one case in the up-town section, there were as many as four estoppels per week before the racks were disconnected. Since this has been done, a period of about four months, there has been but one stoppage for the entire period. The others are favorably changed proportionately to their importance. The sewer crew works on repairs to brick pavements and manholes during periods of rise in the river, when the high water makes work in the sewers impossible.

A third outfit, known as the "asphalt crew," devotes all of its time, when the weather is suitable, to the maintenance of the asphalt and other pavements that are patched with asphalt. When the weather is not suitable for this work, this gang is used with the teams for grading work or any construction that may be necessary.

A fourth outfit is the combination of hauling-equipment, consisting of teams and wagons and motor trucks. The work of this outfit is very scattered and is principally temporary maintenance. When the weather is suitable, the outfit is used as much as possible in making grades for sidewalk construction, cutting approaches to newly improved streets and picking up refuse after the street cleaners.

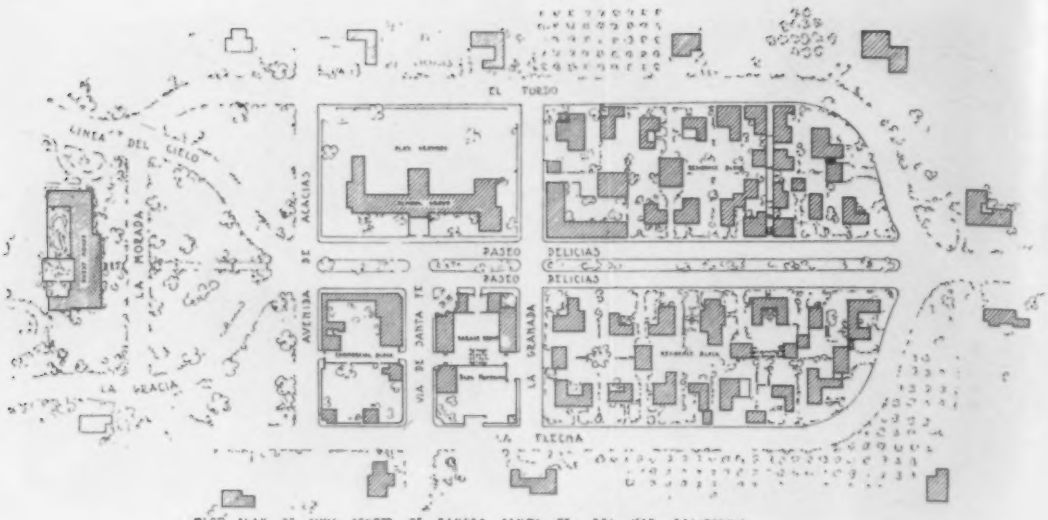
The Shop and Repair Department has functioned in the most satisfactory manner. It handles practically all the repairs of the street department along every line. In conjunction with the Shop and Repair Department, there is storeroom, and during the last year very few purchases were necessary other than the wholesale purchases made at the beginning of the year. In nearly every instance, the supplies held out and were adequate.

Preparing a New City Map

ABOUT sixty years ago a local land development company in Fernandina, Fla., prepared a map of the entire city on a scale of 1 inch to 400 feet. This map was revised from time to time, and accepted and approved by the manager of the development company as the official map of the city and so recorded in the county records, but there is no evidence on the maps of any acceptance or other action by any city officials. All the city had for its information and guidance was a well-worn lithograph copy.

In the last year new maps have been made by the city, one on a scale of 1 to 4,000, and another, in 8 sheets, on a scale of 1 inch to 100 feet. These are available for official use by all departments, and are sold to the public at cost. On blue-line cloth prints of the single sheet map, all houses and business buildings have been spotted and a separate mounted drawing prepared showing the relation thereto of sidewalks, improved streets, street lights, water-mains, fire-hydrants, fire-alarm boxes, garbage and trash collection customers, night-soil collection customers, electric light and power and water consumers and house numbers.

The different materials used in sidewalk and street construction, and the various sizes of street lights, water-mains, etc., are shown in colored ink. These drawings are the official eyes of the administration. Without them systematic and intelligent planning would be well-nigh impossible.



PLOT PLAN OF CIVIC CENTER OF RANCHO SANTA FE - DEL MAR CALIFORNIA
REEVE AND JACKSON - ARCHITECTS

An Exceptionally Planned Rural Community

By Lee Shippey

THE heartbreaking problem of many a city planner has been the mischief done before he was called in, the jumble of streets and houses which "just grew" when the community was young and which prove that "as the lane is inclined so the town is bent." Therefore it was with real satisfaction that delegates to the National Conference on City Planning in Los Angeles recently stopped off a day at Rancho Santa Fe, in northern San Diego County, California. For there the Santa Fe Land Improvement Company, a subsidiary of the Santa Fe Railway, has undertaken the task of creating a harmoniously beautiful and artistic community—one which will have nothing to undo.

Rancho Santa Fe is something new in America. It is not a town, yet has the modern advantages of a city. It is designed to accommodate only 400 families and their employees, yet it covers an area of 15 square miles and contains 53 miles of beautiful parked driveways. Its residents not only have the best of roads to drive over, but electric ranges to cook on; water piped to their doors with which to sprinkle their lawns and irrigate their orange and avocado trees; a well-planned civic center; and on every side surroundings which charm and invite and promise.

Yet it is not a millionaires' colony. It is self-supporting; it is, in fact, a fine example of what planning can do when it is called into service at the very beginning.

Rancho Santa Fe is a historic spot of much natural beauty. Conceiving the injustice of developing such an area in an ordinary way, W. E. Hodges of Santa Barbara, Vice-President of the Santa Fe, urged that it be made "the most perfectly planned community in America." Before any construction work was done, the possibilities of the area were studied by L. G. Sinnard, directing a staff of hydraulic engineers, soil experts, horticulturists, landscape engineers, community planners and architects. Every view of the sea, of the mountains, of sweeping upland or flowing valley was studied. Every commanding building site which would give the completed community somewhat the aspect of a beautiful chateau district along the northern Mediterranean coast was noted. A highway system was worked out with due regard for these considerations, and then the land was subdivided into tracts ranging from five to forty acres, in such ways as to make the most of every natural beauty and asset.

The next step was the preservation of that beauty. Architects noted as successful adapters of Spanish architecture were added to the expert staff, and it was decided that the exteriors of all buildings erected—outbuildings as well as residences, shops and filling-stations

in the civic center as well as homes—must meet the approval of those architects. Not one inharmonious structure was to be allowed in an area of 15 square miles, designed to have about 2,000 inhabitants!

But the real aim of the Santa Fe was to work out a problem in rural life—to create a community which would demonstrate that rural life can be made more attractive than urban life. The Santa Fe also desired production. It was willing to spend a couple of million dollars on a demonstration project, but no matter how beautiful this project was at the beginning, it would grow shabby if it did not prosper. It might be attractive to men of wealth who wished country places, but that would not be solving a problem of rural life. The Santa Fe set its experts to work to assure community prosperity.

GARAGE, WITH SPANISH CORNER GARDEN, AT THE CIVIC CENTER OF RANCHO SANTA FE

Commercialism is disguised and beauty incorporated with safety for traffic in this manner

The Santa Fe was in no hurry. It spent several years in experiments and study and the coordination of plans. That was before the first road work was done, the first tract plotted. Before the building of the community actually began, the company was assured from demonstrations and studies that if only the fruits best suited to each tract were planted, and the care most certain to make them produce were given them, each of the four hundred tracts should yield an "annual safe income" that would mean a community of increasing, not waning, beauty and prosperity; of progress, not of idleness; of homes, not of mere retreats. And, incidentally, the Santa Fe would have thousands of car-loads of products to haul to market annually.

Therefore, one of the foremost horticulturists on the coast was made a member of the expert staff, and those who will not agree to develop their land in the manner surest to provide prosperity are discouraged from buying.

Rancho Santa Fe is a community whose development requires the backing of some such great organization as the Santa Fe Railway. Yet it is a community of real producers, open to the man of moderate means, as well as to the rich. Its residents have been and are being attracted to it by a high ideal, and its community spirit already commands the re-

THIS GASOLINE FILLING STATION AT THE CIVIC CENTER OF RANCHO SANTA FE IS ADMIRED BY MOTORISTS BECAUSE OF ITS CHARM AND DISTINCTION

spect of all southern California.

John Nolen, the well-known city planner, declared on the occasion of the city planners' visit to Rancho Santa Fe that the project inspired him with a great hope. "There is a real need in this country," said Mr. Nolen, "for the community which does not dream of becoming a great city, but intends to be always a small but ever progressing rural community; within easy reach of city life, but forever aloof from it in the healthfulness and peace of the country, with the inspiration of growing things, fulfilling instinctive human yearning to make two blades grow where one grew before. This community, with certain modifications to suit other climatic and environmental conditions, may well become a model for a better, happier, lovelier rural America."

[EDITORIAL NOTE.—THE AMERICAN CITY hopes that the foregoing account of aims and achievements in Rancho Santa Fe may serve to impress railroads and other corporations and organizations elsewhere with the possibilities of the modern "farmer city" idea as a combination of good business and good civics.]

Cooperation Available in Rural Public Health Work

By L. L. Lumsden

Surgeon, U. S. Public Health Service

THE fiscal year ended June 30, 1924, has witnessed continued activity on the part of the U. S. Public Health Service in demonstration projects in rural health work. During the twelve months cooperation in such projects has been rendered in 70 counties, or districts comparable to counties, in 16 states.

The plan of the work was the same as that followed in each of the four preceding fiscal years. The appropriation for the support of this activity is "for special studies of and demonstration work in rural sanitation." In each demonstration project the rural sanitation work is made a part of a well-balanced, comprehensive program of health work and is conducted in cooperation with the state and local health authorities. The cooperation is offered upon the condition that whole-time local (county or district) health service be established. Part of the money (usually over 50 per cent) for the support of the work must be furnished from local governmental sources. The whole-time local (county or district) health officer, or sanitary officer, is given a status of field agent in the Public Health Service, and in some of the states a status of deputy state health officer, and serves as director of the demonstration project. He must present qualifications for the work acceptable to each of the cooperating agencies. The sanitary inspectors, health nurses, and any other assistants in the county health service, work under his direction.

By having the work conducted on such cooperative basis unnecessary overhead expense, friction, and lost motion are prevented. The average project presents a remarkable example of economy with efficiency in public business. All salient branches of health work, such as acute communicable disease-control measures, general sanitation of private homes and public places, malaria prevention, tuberculosis control, goiter prevention, infant and maternity hygiene, venereal-disease prevention, school hygiene, etc., are carried out. Attention is concentrated upon the different branches of the work in what appears to be the most advantageous sequence. The various activities are dovetailed with one another so that every dollar invested and every unit of energy expended may yield the biggest possible dividend in disease prevention and health promotion. By having the different branches of health work needed in the locality carried out under one director, with only one overhead expense, the cost is only a fraction of what it would be for equally effective work if performed by specialized field forces operating separately in each of the branches.

County or local authorities desirous of securing cooperation along these lines should make their requests to the Surgeon General, U. S. Public Health Service, Washington, D. C.; but before being forwarded to the Surgeon General, these local requests should be sent to the State Health Departments for approval.

EDITORIAL NOTE.—Available reports of special value on rural health work include:

Rural Health.—A 242-page symposium. Apply to American Country Life Association, Grand Central Terminal Building, New York City.

Fundamentals of Rural Health Work.—By W. F. Draper. 1924. 8 pp. Apply to Government Printing Office, Washington, D. C.

Health Administration in Rural Districts.—By Allen W. Freeman, M.D. 11 pp. In "Health News," New York State Department of Health, September, 1923.

Cooperative Rural Health Work of the Public Health Service in the Fiscal Year 1923.—By L. L. Lumsden, Surgeon, U. S. Public Health Service. 22 pp. In Public Health Reports, December 14, 1923.

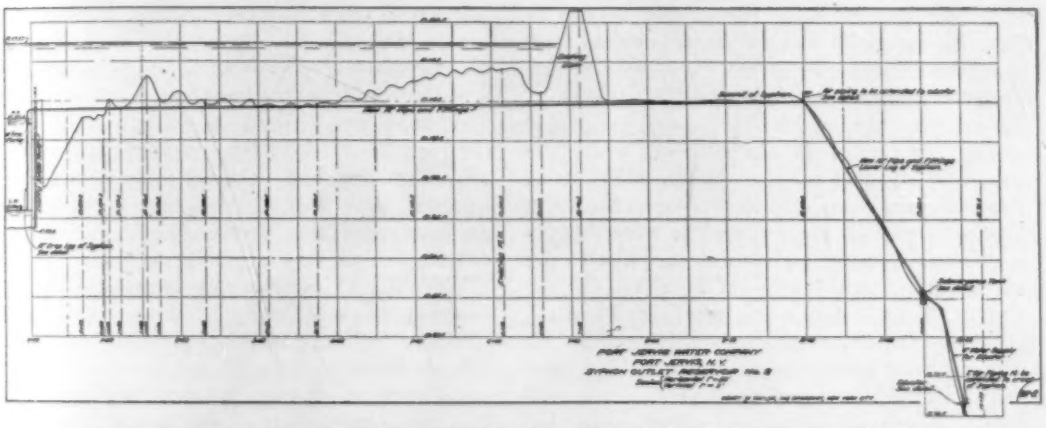
Syphon Increases Available Reservoir Capacity

By Henry W. Taylor
Consulting Engineer, New York City

THERE are only one or two instances of reservoirs being drained by syphons operating under true negative pressure, lifting the water from the lower levels of a reservoir over a summit and discharging it into a ravine below. Because of this fact, readers of THE AMERICAN CITY will undoubtedly be interested in the design and construction of a new outlet for Reservoir No. 2 of the system of the Port Jervis Water Company, Port Jervis, N. Y., which was constructed last year and tested last fall.

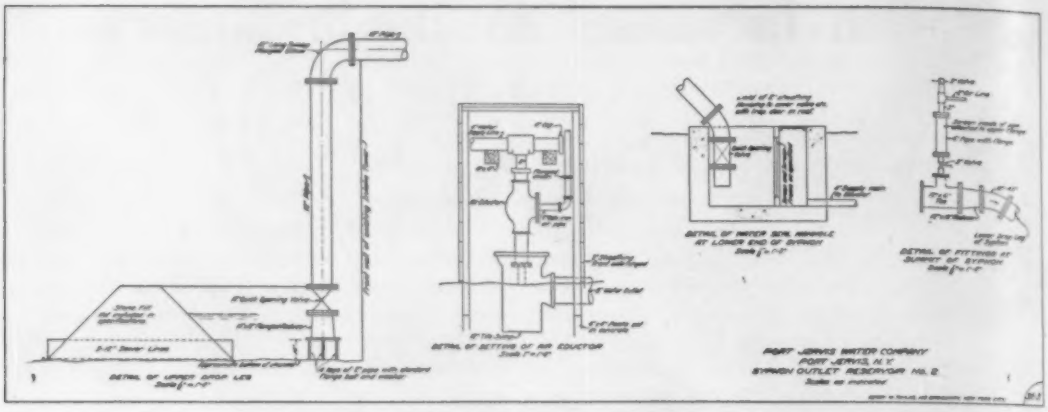
The original outlet from the reservoir was constructed of standard cast iron pipe with lead joints. After entering the reservoir through a low dam, the line dropped to the bottom of a gate-house which extended to the low area of the reservoir, some 15 feet below the summit of the pipe. When full, the reservoir water-level flooded the original summit by about 9 feet of water. The old outlet operated successfully until the water had been drawn down to an elevation of approximately 3 feet below the crest of the pipe line, and then failed by reason of air leakage through the loosened lead joints or by taking air at the unsealed outlet. Repeated calking of these joints had only a temporary effect, and the result was that a volume of water about 14 feet deep and representing about 75,000,000 gallons was never available for use. On the other hand, to pump an equivalent volume of water represented an expenditure for power alone of not less than $2,500 per year.

The writer was first consulted with reference to a tunnel outlet which would extend under the shallow section of the reservoir and reach the lower areas at a depth to allow a gravity flow of water to drain the reservoir. The character of the rock that would be encountered suggested that great difficulty might arise from opening seams in the rock bottom of the reservoir and providing opportunity for leakage which would be difficult to discover and repair. Comparative estimates also indicated that a syphon would be far cheaper if one could be installed which would involve no distant machinery to insure its continued operation.



PROFILE OF SYPHON AT RESERVOIR NO. 2 OF THE PORT JERVIS WATER COMPANY

The accompanying plans show in line form the general layout of the syphon as installed. Minor changes were made at the crest, and elaborate masonry structures were installed at the crest and the outlet of the pipe line. The syphon consists of 10-inch genuine wrought iron pipe with threaded joints up to the crest, where the size is reduced to 8 inches for the remaining 150 feet of the drop leg of the syphon. The crest was kept as close to the outlet as practicable and the drop leg made as short as might be and of a size to increase velocities and carry away as much



DETAILS OF EDUCTOR AND SYPHON OUTLETS

air collecting at the crest from leakage or suspension as possible. In addition to the head required to overcome friction losses in the pipe for the required flow of about 2,000,000 gallons per day, there was excess head available for the installation of a Schutte-Koerting air ejector operated by water flowing from the outlet of the syphon. The syphon discharge is, in other words, sent through a second drop to operate an air ejector, which maintains a vacuum of about 19 inches at the crest of the syphon.

The new outlet is also flooded when the reservoir is full, and the syphon starts itself without priming. The complete cycle of a year's operation of the syphon may be described as follows: The reservoir fills in the spring and floods the outlet by 9 feet at the crest. When water from storage is required, the outlet valve of the syphon is opened and gravity flow takes place. Part of the flow from the outlet passes through a screen and into a 4-inch pipe leading to the ejector below. Should subsequent rains render the use of stored water unnecessary, the outlet valve is shut down, but not completely closed, unless the water-level is still above the crest of the outlet pipe, and sufficient water is allowed to flow through the syphon to supply the ejector and maintain the negative pressure at the crest. The outlet is then always ready for full use without priming and without machinery of any kind. Late in the fall and just before the closing in of the winter season, the syphon is used to draw all of the water available from the reservoir and is allowed to break from the inlet end of the pipe. The pipe line is then drained and vented at the crest and left for the winter.

Construction

In laying the pipe, all joints were made up so that no thread was exposed at the couplings. At minor angles in the line, adjustable couplings, made on the order of a dutchman flange, were used. By rolling these flanges on themselves, a deflection of the desired amount could be obtained up to 16 degrees. Two expansion joints were set in the line, and the pipe was anchored at several points. Outside the reservoir, the pipe line is above ground for some distance and is supported on concrete piers and anchors. A quick-opening valve was provided at each end of the syphon to facilitate the first starting of syphonage, when the syphon was pumped full of water and the valves opened simultaneously. The lower end of the syphon was water-sealed, which was not the case with the original outlet pipe. All of the piping was given two coats of asphalt roofing paint.

In the course of construction, a 14-foot cut was made through the old dam in zero weather, the banks being allowed to freeze as the work progressed, so that no bracing or sheathing was necessary. The frost was removed as the backfilling started, and the removed dirt was kept under straw, so that only a thin layer of it was not usable as back-fill. The line was tested out with practically no leakage, and the ejector does very little actual work but is a surety against accumulating trouble at the crest with eventual breakage of the syphon.

THIS MAGAZINE IS NOT COPYRIGHTED
Quote as you wish, giving credit to THE AMERICAN CITY.

Road-Maintenance Problems

Results of an Investigation and Study of Seven Different Road-Maintenance Problems

THE Maintenance Committee of the Advisory Board on Highway Research, Division of Engineering, National Research Council, during 1923 made an investigation and study of seven different road-maintenance problems, some of which are reported in abstract below:

Gravel Corrugations

Dr. George E. Ladd, Economic Geologist for the U. S. Bureau of Public Roads, has made a study of gravel corrugations. Questionnaires were sent to all the highway departments in the United States, and replies were received from 32 states. The consensus of these replies was that corrugations form in all gravel roads when the traffic becomes 500 to 600 vehicles per day. The formation of corrugations is in no way dependent upon construction or maintenance methods. Corrugations are most apt to occur on flat grades. Two general reasons were assigned for the formation of corrugations: first, actual kick-back of material due to the spin of the drive-wheel returning to the road surface after a bounce caused by an unevenness in the surface of the road; second, displacement of material due to impact of the wheels, both front and rear, after the bounce. This displacement is accentuated in rainy weather by the splashing of water, which carries away the binder and fine material from the corrugations.

Any slight unevenness of the road which reacts on the springs of passing cars may cause a series of corrugations. When the unevenness is hit by a passing car, the springs are at first depressed; they then expand and virtually lift the weight of the car from the road. In some cases the wheels of the car actually leave the road surface; then the springs come back to normal, and the weight of the car is impacted on the road surface. If the road is wet, a slight indentation is made; also, as the drive-wheels are spinning, material is kicked back from the point of contact, and a depression is thus started. After this depression has started, it grows rapidly and other depressions are formed in a similar manner until we have a complete series. On flat grades during rains the depressions collect the water which is splashed out by passing vehicles, taking with it quantities of road binder and fine material.

The states were almost universally agreed as to the method of cure of corrugations: blading or dragging with heavy equipment soon after rains, while the gravel is still moist, supplemented by occasional scarifyings, seems to have produced the best results. It should be noted that this cure is not permanent, but lasts only until the next rain.

Do Your Problems Include:

Gravel Corrugations?
Surface Treatment of Gravel Roads with Refined Tar?
Dust Prevention with Calcium Chloride?
Sizes of Mulch Gravel for Maintenance?
Crack-Fillers for Concrete Pavement?
Maintenance Accounting?
If so, read this article.

Surface Treatment of Gravel Roads with Refined Tar

The Michigan Highway Department has continued its research in this subject through the year and has surface-treated with refined tar approximately 45 miles of well-constructed gravel roads carrying a traffic of from 800 to 1,500 vehicles a day. The method of surface treatment which they have adopted is, briefly, as follows: The work is started early in the spring, when the frost is coming out of the ground. The road is first shaped up and the gravel allowed to consolidate. As soon as it is fairly well dried out, it is swept and an application of 1/6-gallon of a refined tar per square yard is applied and allowed to penetrate into the surface. As soon as the surface takes on a brown appearance, approximately ⅓-gallon per square yard of the same cold material is applied and immediately given a top dressing of pea gravel or slag screenings. The Michigan Highway Department emphasizes the fact that the success of this kind of work depends largely upon the maintenance given the road, both before and after the treatment. Surface breaks are taken care of as fast as they occur. They are filled with a cold mixture of refined tar and coarse gravel. These patches are struck off and smoothed with a flat-bottom shovel.

The Wisconsin Highway Commission has also treated a large mileage of gravel roads with refined tar, and reports satisfactory results. The Wisconsin method of treatment is similar to that used in Michigan. The road is

first scarified and smoothed and allowed to compact. It is then swept and an application of cold tar applied from shoulder to shoulder, 1/6-gallon per square yard. The road is then opened to traffic for 24 hours and ⅓-gallon of cold tar per square yard applied and lightly sanded, using about 15 cubic yards of sand per mile for a 20-inch width. The travel is then allowed to use the road and in a few days a second sand coat is applied, using about 35 cubic yards per mile for a 20-inch width.

For patching, a tar mastic is prepared and allowed to stand in piles along the side of the road. About 17 gallons of cold tar per cubic yard of sand is used in preparing this mastic.

Dust Prevention with Calcium Chloride

The Michigan Highway Department has experimented with calcium chloride and light oils for dust prevention on gravel roads. The results with both have been satisfactory. They report the following points to be of great importance in calcium-chloride treatment: The chloride should be applied while there is still some moisture in the gravel, and the application should be in the neighborhood of from ½- to 1 pound per square yard, giving a light treatment which will help avoid future trouble. The application should be uniform over the surface. The road should be left free from all lumps or piles of chloride. Ordinarily, three applications during the season is sufficient, but the second or third application should be made before the former application of material is entirely gone. In other words, there should be a little overlap rather than a dust interval. Care should be exercised in varying the amount to be applied to the different roads or sections of roads, inasmuch as shaded portions as well as sand or clay gravel have much to do with the quantity of chloride that should be used.

Sizes of Mulch Gravel for Maintenance

Nearly every state is now maintaining most of its gravel road mileage with a mulch treatment of gravel. Various sizes and amounts are used. Little published information is available on this subject. The Michigan Department recommends the following: Replacement material should be limited to not exceeding 1 inch in size, preferably ¾-inch, with about 60 to 75 per cent of the material being retained on ¼-inch mesh. The clay content should be held down to not over 5 per cent, and the filler should be substantial material which will help get away from the dust nuisance. The mulch should be applied in very light courses, not exceeding one inch in depth at any time, and should be applied preferably late in the season or during the spring months.

Crack-Fillers for Concrete Pavement

Nearly every state and numerous municipalities are experimenting more or less with various tars and asphaltic fillers for the repair of cracks in concrete pavements. A few years ago there seemed to be a demand for a light-colored filler which would harmonize with the color of concrete pavement and thus be less noticeable than the black tars and asphalts. A satisfactory light-colored filler at a reasonable price has not been developed. The Committee of the Advisory Board on Highway Research is inclined to believe that public sentiment on this question is changing. As the mileage of concrete roads increases, the public becomes familiar with maintenance methods and does not look upon the black streaks with the horror that it did a few years ago. Furthermore, on heavily traveled pavements the oil and grease droppings from cars soon stain the pavement until the black crack-fillers are not conspicuous.

One of the most extensive tests of crack-fillers is being carried on by the Iowa Highway Commission on a concrete road immediately outside the city of Des Moines. On this experiment three tars, nine asphalts and blown oils, one emulsified asphalt and one light-colored material were used. The experiment has only recently been started. One barrel of each material has been applied and is now being tried out in service.

Maintenance Accounting

The Mississippi Valley and the American Association of State Highway Officials have committees at work undertaking to develop a feasible uniform system of maintenance accounts, so that maintenance reports of various states may be put on a comparable basis. The following report was adopted by the Mississippi Valley Association, and these states are attempting to make their accounting conform to the general classification.

"Expenditures by the states, through their maintenance organizations, shall be classified in their annual reports as follows:

1. Maintenance administration
2. Maintenance proper
3. Additions and betterments
4. Parks, camping-grounds and roadside beautification

"The last three classifications shall be changed to a specific section of road.

"Additions and betterments shall include ex-

penditures for the increased permanent value of the road to accommodate traffic. This will include the cost of

1. Increased width of surface or road-bed
2. Increased depth of wearing surface over any previous maximum depth
3. New guard-rails
4. New walls
5. New drainage structures and watercourses
6. New subdrains
7. Improving grades, alignment and vision"

Wisconsin has adopted the following classification:

1. Maintenance administration, covering general office overhead
2. Maintenance supervision, covering district office overhead
3. General maintenance, covering patrol and repair work. This cost is kept by patrol sections
4. Reconstruction; covers replacement to restore to original condition. Cost kept by patrol sections
5. Additions and betterments; covers expenditures which change the section of the road and produce increased capital investment
6. Marking and signing; covers maintenance of all traffic guides on the state system

It will be noted that these classifications can be consolidated to conform to the four main divisions of the Mississippi Valley State Highway Officials report.

When maintenance costs are kept in a uniform manner by the various states, it will be possible to make comparisons of such costs. This, however, is only the first step toward uniform maintenance reports. Maintenance reports, even though summarized from uniform records, are not of the greatest value as long as they are based on a per-mile cost. The next step is to reduce such costs to a ton-mile unit; then useful comparisons between states and between types can be undertaken. This, of course, involves traffic census data, which must be secured at regular intervals and in a uniform manner.

Parking Facilities for Industrial Employees

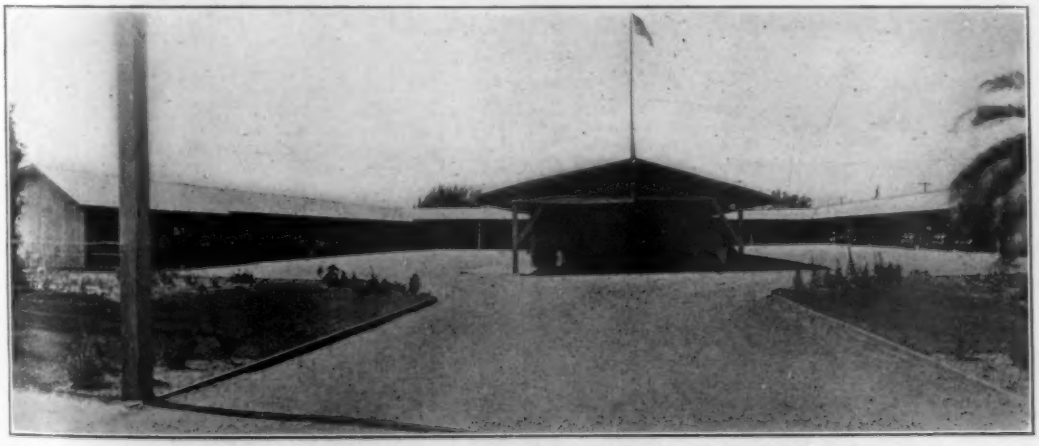
REALIZING that city governments cannot be expected to furnish parking space in the streets for the increasing number of automobiles used by employees of large industrial plants in getting to and from their daily work, the heads of such industries are giving more attention than heretofore to the solution of this problem. A plan just instituted by the C. L. Best Tractor Company, of San Leandro, Calif., is of interest in this connection.

This company has purchased property adjacent to its plant and has constructed a private parking station for the exclusive use of its employees. The parking station has an area of 35,000 square feet and will accommodate 150 machines. Stalls for 80 machines have been erected and wash-racks installed where employees may clean their machines. The structure to house machines incloses the station on three sides, and an iron fence and gateway are built on the fourth side.

An attendant is in charge of the station for the purpose of directing car owners to their proper stalls and protecting machines against possible automobile thieves.

It has been figured that the station will save from $50 to $100 per year for each car owner, as annual depreciation on automobiles standing out of doors in all kinds of weather ranges between these amounts.

Heretofore machines have been parked on both sides of streets surrounding the plant, adding to the danger of automobile travel through the district and making more difficult ingress and egress at the factory.



PARKING SPACE FURNISHED FOR EMPLOYEES BY A LARGE INDUSTRIAL PLANT IN SAN LEANDRO, CALIF.

Play Space on New York's Water-Front

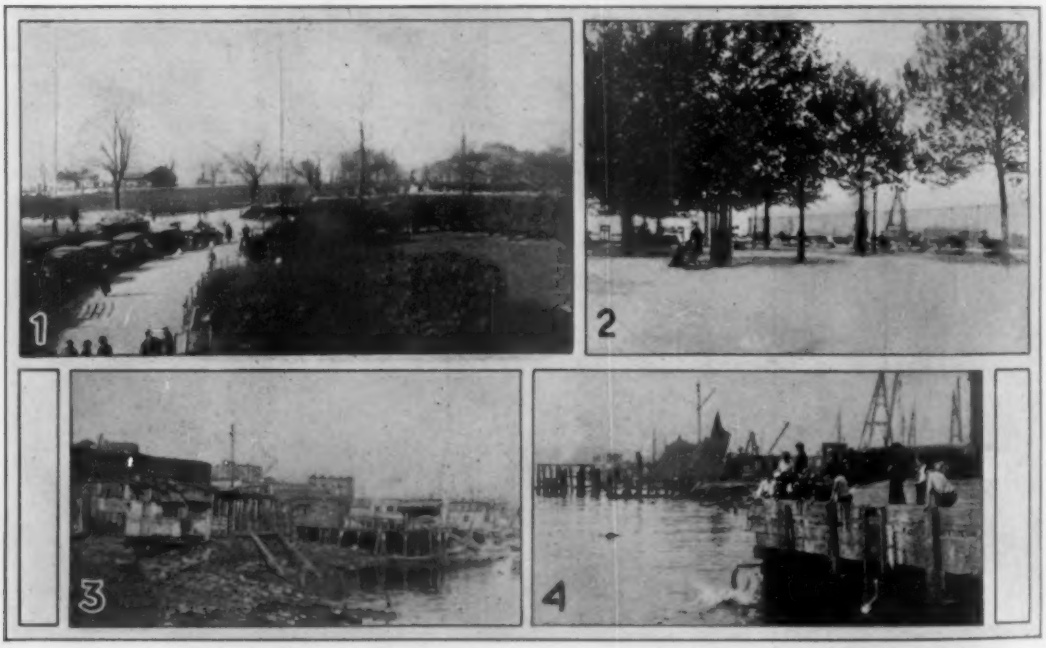
By Charles J. Storey

NEW YORK has about two hundred miles of water-front on its rivers, bays, ocean and sound. No other city in the country has as great a water-front, and possibly no other city has as great a need for utilizing a reasonable amount of it for the recreation of its inhabitants.

Of this water-front, 25 miles have been devoted to public parks. About 44 miles are in factories, docks and other commercial uses. With the increased use of the water-front for commercial purposes, it is also becoming more and more recognized that the benefits to the city of water-front parks, boulevards, beaches and playgrounds are tangible and concrete.

The Recreation Survey of the Regional Plan of New York and Its Environs undertook to discover how the water-front of Greater New York was being utilized. The following map and table give a bald idea of what was found. They do not tell of the crowded commercial parks and beaches, as those on Staten Island, where not a foot of the water-front as yet belongs to the people. And from 59th Street on the East River and all along the Harlem River are thousands of pleasure launches belonging to boating enthusiasts, anchored along the wharves and by improvised shacks, and boat-houses. Only a small proportion of these launch owners belong to boat clubs, and every cove and bay, no matter how small and how covered with refuse its shores are, is eagerly utilized as an anchorage. Nor does the table tell of the hundreds of people who live in shacks and tents and on house-boats in the summer, around the water-front. Even Manhattan has these campers along its crowded waterside. This is the human side of the water-front which we are apt to forget when we think of it only as a commercial asset to the city.

It is through the parks that most of New York's citizens enjoy its waterside. Manhattan has already been more generous in saving its water-front for park space than other boroughs. Nearly one-third of its entire frontage on the East, Harlem and Hudson Rivers is in parks. Riverside Park on the Hudson and High Bridge Park on the Harlem are the longest stretches, although there are a number of smaller and more intensively used parks on the East River. Riverside Park

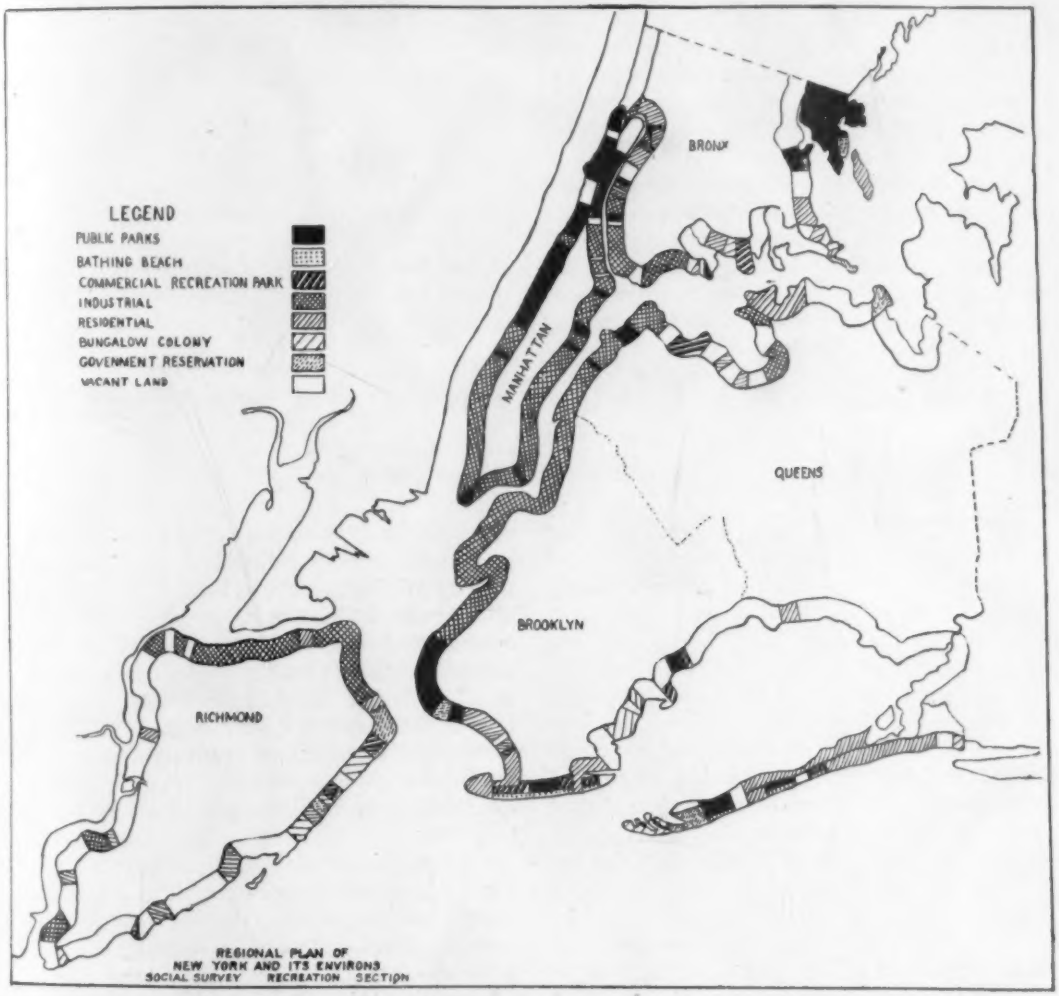


THE GOOD AND THE BAD ALONG THE MANHATTAN WATER-FRONT

1. Battery Park, one of the most intensively used parks on the Manhattan water-front. 2. John Jay Park, East River at 77th Street, one of New York's beautiful small riverside parks. 3. Shacks and boat-houses on the East River at 122nd Street. 4. Hudson River at West 47th Street—off the dock

has always been separated from the water's edge by the tracks of the New York Central freight line, but plans are under way to cover these tracks and extend the park actually to the river's edge. When this is accomplished, New York will have one of the largest and most beautiful riverside parks in the world.

The Bronx has nearly as much park land on the water-front as Manhattan, except that most of it is in one park, the extensive Pelham Bay Park on the Sound. The borough of Queens, with the longest water-front of any borough, has 3½ miles of park on the water, or about 7 per cent of its length. Brooklyn's large parks are almost all inland, so that only 4 miles out of a water-front of 36 miles is park property. But Brooklyn has rescued several miles of beach at Coney Island by erecting a boardwalk and building a wide beach beneath it, so that its play space is really larger than just that allotted to parks. The city is also about to acquire 50 acres on Plum Island in Jamaica Bay for a bathing-beach and park. This will be the first municipal



PRESENT USE OF WATER-FRONT AND APPROXIMATE LENGTH AS MEASURED IN MILES ON ACCOMPANYING MAP

	Manhattan	Bronx	Brooklyn	Queens	Richmond	Total
Public parks	9¼	8½	4	3½		25¼
Commercial recreation parks		½	3	1½	1	6
Industrial	15¾	3½	11	5	8½	43¾
Residential		4½	6¾	11	3½	26
Bungalow colonies		2¾	2	4¼	2¼	11¼
Government reservations		2	¾	2¼	1½	6½
Vacant land	4	16¼	8½	24½	19	72¼
	29	38	36	52	36	191

bathing-beach on this beautiful bay.

Staten Island, with only about half its water-front built on, still has no public parks, or any land reserved on the water for the use of its citizens. It has nearly 15 miles of beautiful beach, but at present there is not one place where the general public has free access to it, as it is entirely in private hands.

Until recently New York had for the recreation of its 5½ million inhabitants about 2 miles of public beaches. With the taking of the beach at Coney Island from private hands and with the expected improvement of the beach at Jacob Riis Park at Rockaway, and also with the building of a boardwalk along the rest of the Rockaway shore front, we shall have nearly 9 miles of bathing-beaches. Any one who has seen the hundreds of thousands of men, women and children who overcrowd the existing beaches on any warm Sunday or holiday in summer, will realize that even 9 miles of ocean beach is not too much.

One indication of the recreation value set upon the shore front by the citizens of New York is shown by the 11 or more miles of summer bungalow colonies which have sprung up on the two bays and the ocean in the last few years. These colonies are often located on leased land and are temporary in character. Numerous families migrate each summer from all parts of the city, including the East Side and the poorer sections of all boroughs. Many of the bungalow colonies are nothing more than camps where everybody lives all day out of doors on the beach in a bathing-suit.

Tent camps are to be found all along the water-fronts outside of Manhattan. These are, of course, temporary and many are simply "squatters" who pitch a tent for a few weeks. In Pelham Bay Park, the Park Department has assigned some acres by a beach for campers who come year after year. At Rockaway private camp sites are rented near the water. Most of these are very crowded, having dozens of tents on small plots closely placed together. Although bath-houses are prohibited on the East River because of the pollution of the water, one may see any summer day, along the wharves of Manhattan, swarms of boys, and in some places girls and women, bathing in water so dirty that the only favorable thing to be said about it is that it is cool and wet.

Baltimore's Civic Opera Experiment

By Amalie Sonneborn

INTEREST in opera in many parts of Europe has reached that state of importance where every city of any size and cultural significance can boast of a local opera company. In America, on the other hand, opera has been largely an imported affair, and with rare exceptions the casts of the big opera companies are made up of singers gathered from the four corners of the earth, who have received their formal training on some foreign stage and have emerged into the realm of stardom abroad before being acceptable in the sight of the American public. There is small field for the development and training of opera singers in America at present. It was in recognition of this lack that a plan was put into execution in Baltimore during the past season that is capable of great development in the direction of the establishment of a local opera company, which will give local talent a chance to be heard and to receive something of the formal discipline that appearance as a professional carries with it.

The plan for the Baltimore Civic Opera was originated by Baltimore's Municipal Director of Music, Frederick R. Huber, whose able leadership in local musical matters has the hearty support of Mayor Howard W. Jackson, and the city administration. Through Mr. Huber's efforts the Baltimore Symphony Orchestra came into being, which, because of the low price of its tickets, makes good music available to all. During the past season he arranged for the Orchestra to give two Children's Concerts, and this experiment proved to be so successful that these concerts will become a regular part of the Symphony Orchestra's yearly program. For next season Mr. Huber is laying plans for a civic chorus, which will consist of an amalgamation of all the different choral societies of the city, for two or three great performances; and at some future time, when the interest in music shall have become more sophisticated, he feels that the establishment of a Manuscript Society for the encouragement of original composition will be possible. So, in January, when George De Feo made it known that he was going to bring his opera company to Baltimore for two weeks in May, Mr. Huber suggested that on one night each week Mr. De Feo substitute local singers for the singers in his company in the

principal roles, and the New York impresario, seeing the possibilities of the plan, decided to adopt it.

According to Mr. Huber's plan, the singers were to be chosen by a Casting Committee, which was also to choose the operas to be given on the Civic Opera nights. A committee was therefore appointed, so selected that each member would represent a different musical group. It consisted of Harold Randolph, Director of the Peabody Conservatory of Music; Mabel Garrison, formerly with the Metropolitan Opera Company; George Castelle, cantor at one of the leading synagogues and Director of the Meyerbeer Chorus; Frederick M. Supplee, representing the Metropolitan Club; and George De Feo. Mr. Huber, feeling that the opera was a civic rather than a municipal project, promised his support, but withdrew from active participation, and the plan also had the hearty support of the Mayor, who has been ever willing to aid all cultural movements that will enrich the life of the community.

Measuring the Amateurs Against the Professionals

The committee decided that on the first night of Civic Opera "La Bohème" would be performed, and for the following week "Cavalleria Rusticana" and "Pagliacci" were selected for production. On the first night of Civic Opera only the principal roles were to be performed by local singers, and the supporting cast was to be recruited from the professional company. This would force the amateurs to measure themselves against professionals, but it might lead to a somewhat uneven performance. This drawback would be obviated on the second Civic Opera night, when the entire cast was to be made up of local singers, and only the chorus was to be professional. Each plan had its merits and demerits, and each deserved a trial.

The rules drawn up for the audition, at which the singers were to be selected and cast in their parts, were designed to insure strict impartiality, and were published in newspapers and posted in places where they would be brought to the attention of those interested in competing. The singers who wished to be heard at the audition, which was to be held at the Lyric Theatre on Saturday afternoon, March 1, were to send in their names to Mr. Huber in advance, stating whether they would bring their own accompanists or whether they wished to make use of the accompanist appointed by the committee. The names of the contestants were not revealed to the members of the Casting Committee.

The audition proved to be a most interesting affair. The contestants, who were relegated to the back-stage, each drew from a hat, gallantly lent for the occasion, a number which indicated the singer's place in the audition; while the members of the committee, each armed with a set of numbered cards and a pencil, disposed themselves in different parts of the auditorium to listen and make notes. The accompanist announced "Number One!" and the audition was on. Then in rapid succession the singers followed one another, some alone, and some singing duets, each performing an aria from an opera, using the proper gestures, and singing until the committee signaled the contestant to stop. In an hour and a half all the eligible singers, numbering over thirty, had been heard, and the committee withdrew to make its selection. In cases where opinion was divided the singers were called by number to perform once more. The following day the casts for the Civic Opera, as decided upon by the committee, were made public.

Ten weeks later the Civic Opera cast with the De Feo Opera Company performed "La Bohème" and the following week gave "Pagliacci" and "Cavalleria Rusticana." The performances were highly creditable. The singers had been coached by George Castelle, and Mabel Garrison had kindly offered the use of her studio for frequent rehearsals and stood by to make pertinent suggestions. When the De Feo Opera Company came to Baltimore, the orchestra leader went over the operas with the local singers, but it is to be regretted that there was no opportunity for a full-dress rehearsal with orchestra, chorus and costumes. In spite of this disadvantage, the operas were very well done, and the singers, appreciating the value of this rare opportunity, made the most of it. It gave them a taste of professional discipline which showed itself most clearly in the unfaltering tempo with which the performances were carried through, a decided contrast to the tendency to drag which is the most frequent characteristic of the amateur production. A fine cooperative spirit among the singers was noticeable in these performances, which augurs well for the future of such joint efforts. The audience, on the other hand, enjoyed the opportunity of hearing what Baltimore singers could do in a professional way.

The Baltimore Civic Opera was a modest effort, but a highly significant one, and the fact that the plan was immediately copied in

Winston-Salem is an indication of its fruitfulness. It lays the foundation for a more permanent structure whereby American singers can get operatic discipline and experience without having to go abroad, and it gives the public an opportunity to hear opera creditably performed at a low price, which elaborate productions presenting "stars" make quite out of the question. This experiment, though carried through on a small scale, very surely writes Baltimore's name into future histories of the progress of American culture.

Municipal Band Concerts in Pittsburgh

By H. Marie Dermitt

Secretary, Civic Club of Allegheny County

FOR the eighth year band concerts are being held this summer in the parks of Pittsburgh under the supervision of the Civic Club of Allegheny County. Two bands are employed. One, composed of 30 men playing under the baton of D. V. Nirella, presents 37 concerts in the large parks from July 6 till August 17. The program is changed twice a week. The other band, of 16 men under the direction of Charles Passetti, gives 25 concerts in smaller parks, making a total of 62 concerts presented in 25 districts.

Municipal band concerts are given in a greater number of districts in Pittsburgh than in any other city in the country. An appropriation of $10,000 for actual band expenses and $1,000 for miscellaneous expenses is made by Council. Miscellaneous expenditures include the salary of the choral leader, lantern, lantern slides, song sheets, transportation of the portable band-stand, and various other items. The Civic Club donates the personal supervision of the executive and assistant secretary, the services of a stenographer for eight weeks, postage, stationery, telephone messages and supervisors' badges.

A high standard of music is maintained. Jazz is strictly prohibited. Politics do not enter into the careful selection of bands. Community singing, especially in the smaller parks, is one of the most animated parts of the evening concerts. Foster melodies, folk, sacred, patriotic and the better popular songs make up the programs.

Each concert is attended by a representative of the Civic Club, who reports on the performance of the band and the effect of the music on the audience. A "good order" squad is made up of local boards of trade and other prominent citizens.

The Civic Club has the hearty cooperation of all local newspapers in spreading the message of the municipal concerts. The five large dailies print the program in full on the front page, and editorial and supplementary articles give splendid prominence to this municipal undertaking. The twenty or more weeklies and dailies issued in all sections of the city and outlying districts are also most generous in their support of the municipal concerts. Libraries use programs on their display boards and accentuate the announcements by special notices placed in the lobby of the main entrance, calling the concerts to the attention of new borrowers and visitors from out-of-town.

The large attendance and the wholesouled, rapt attention of the audience is a daily expression of appreciation to the city for the free municipal concerts.

Community Advertising Has a Setback in England

COMMUNITY advertising received an unfortunate setback in England recently. The Corporation of Kingston-on-Hull made application to Parliament for power to levy a two-cent rate on the ratable value of the city. This was estimated to produce $12,500 annually. The Secretary of State, however, threw cold water on the idea like this. He said he "submitted that the proposal that local authorities should have powers to spend money on advertising the industrial advantages of their districts is much to be deprecated, as it would be impossible to refuse to one authority a power of advertising which had been granted to another, and the competitive advertising which would result would give no advantage to the country at large, while it would involve a considerable and needless expense of public money."

To put it mildly this view-point of the Government on modern advertising is amazing and more is likely to be heard of it. The Rt. Hon. the Lord Mayor of Hull, a keen advocate for judicious publicity, is expected to address the convention on the subject. The Health Resorts and Watering Places Act, 1921, gives powers to pleasure resorts to use profits from municipal ventures up to four cents in pounds on ratable value, but this privilege for industrial centers is taboo.

—*Associated Advertising*, July, 1924.

SOME OF THE 1,525 CHILDREN WHO ATTENDED A SATURDAY MORNING MATINEE AT THE IMPERIAL THEATER, JACKSONVILLE

Children and the Movies

By Jason S. Joy

Executive Secretary, Committee on Public Relations

ALMOST since the very establishment of the motion picture as a means of public entertainment we have all heard the question:

"What about the movies and our children?"

Likewise we have all heard the assertion:

"There are a great many pictures that our boys and girls should not see."

The question is important. The assertion is true. What, then, are we going to do about it?

The first thing to do, it seems to me, is to look the situation squarely in the face. It is worthy of serious thought, and should have an altogether fair consideration.

It is a simple thing (perhaps it is simple in both senses of the word) to say: "Make all pictures of such a character that we need feel no hesitation in allowing our youngsters to view them." That, of course, can't be done, if the making and showing of movies is to go on—and certainly we don't want them to cease. For if every picture were fitted to the adolescent mentality, if no picture contained those phases of life which interest us grown-ups though they may not be entirely fitting for juvenile thought, we of more mature age and experience would quickly stop our visits to the picture houses. And if the producers and exhibitors had to depend upon children for their patronage they would not long remain in business.

There must always be pictures which are not intended for adolescent observation, and every thoughtful person will accept that situation. So let's stop urging that the fault in the matter of "children and the movies" rests wholly with those who make and show the movies.

I contend that we parents, we teachers, we custodians of the welfare of children, have a much more distinct and definite responsibility than many of us have chosen to admit. There are innumerable novels which we read, but do not place in the hands of our children. There are many stage-plays which we might hear, but to which we would scarcely take the aforesaid youngsters.

What do we do in these matters? We exercise some supervision over what they read or hear. Why, then, shouldn't we do the same thing in respect to the motion pictures which they go to see? That is a much more difficult matter, I will admit. The movies are more accessible, more easily within the reach of the juvenile spending-allowance, than the novel or the stage play. And, it might be added, they are more appealing to the youngsters than either of the other forms of entertainment.

But the difficulty of the task does not lessen our responsibility. Parents and civic leaders can, at least, learn from our children the frequency of their attendance upon motion pictures, and the type of pictures they care best to see, rather than sit by in idle ignorance of their habits in this regard. The children can be taken, or sent, to the higher type of picture, of which there have been developed within the past few years a really large number. And as these better pictures receive better support from the public—from adults and children both—more and more of them are being made, for the producers are learning that this is the sort of picture the public wants.

Legislative Attempts to Solve the Problem

In some parts of the country efforts have been made to place the responsibility for juvenile movie-attendance upon the state. That is to say, laws have been passed setting age-limits, under which unaccompanied children might not be admitted to picture houses. In New York State, no child under 16 may enter without parent or guardian; in Massachusetts, New Hampshire and Pennsylvania, no child under 14; in Rhode Island and Connecticut, no girl under 16 or boy under 14.

But this hasn't worked out with any degree of success.

The New York law has been a distinct failure. In the first place, it has been easy for a child under the legal age-limit to hail a good-natured adult, hand over a coin and say: "Take me in, Mister?" or "Take me in, Lady?" Worse yet, some of the cheaper and smaller houses have actually employed adults for this very purpose; and others have admitted children without question and then simply "squared" the inspectors whose duty it is to look for violations of this law. It has been more or less easy, again, for the youngsters to misrepresent their ages.

There is still another angle to this attempt at having the state solve what problem may exist as to the child and the movies. It is a definite shirking of parental duty, just as censorship is a shirking of individual duty by placing the responsibility for the kind of picture we see in the hands of a few political appointees.

An Organized Effort to Raise Motion Picture Standards

A splendid organization of men and women is now engaged, in this country, in an effort not only to improve the general standard of motion pictures, but to do whatever is possible toward looking after the relationship between the child and the movie.

This is the Committee on Public Relations, which cooperates with twenty great concerns making and circulating films, guided by Will H. Hays, as president of the Motion Picture Producers and Distributors of America. These firms make about 90 per cent of all pictures created in this country, and this country makes 90 per cent of all the world's films.

The Committee, formed at Mr. Hays' invitation, includes representatives of sixty-odd betterment organizations with nation-wide membership. Its activities reach out to some 30,000,000 citizens. It includes such organizations as the Mothers and Parent-Teachers Associations, the General Federation of Women's Clubs, Boy Scouts, Y. M. C. A., Y. W. C. A., American Federation of Labor, American Legion and others. The American City Bureau is also a member of the Committee on Public Relations.

With regard to children and the movies, the Committee is trying an extremely interesting experiment. This is the Saturday morning matinee for young people. It operates in this fashion:

A program is arranged, not of babyish fairy-tales nor goody-goody stuff which long ago used to be considered the only style of material suitable for youngsters, but of live, active, amusing, entertaining pictures—some of them, indeed, which have proved successful when shown before adult gatherings. Parents are informed that their children may see such programs as arranged by the Committee, without harm of any sort, and, indeed with actual benefit. The admission-prices are low, generally being set at ten cents. The theater-owner cooperates, because he realizes that here is his next generation of patrons. For him these matinees are not intended as money-making enterprises. Sometimes there is a little profit over the actual operating cost.

Now, there are several excellent reactions from this plan. In the first place, the young people, having seen one program, are not so likely to demand that their elders take them to night performances during the rest of the week. That pleases the parents. Next, the young people are being made into "movie-fans"—which pleases the theater-owner. But best of all, the young people are taught to appreciate the really high-class sort of picture—and having acquired that taste in their youth will continue it as they grow up. And this should please all of us who not only have our children's welfare at heart, but who are desirous also of seeing the motion-picture, wonderful instrument of enlightenment as well as of entertainment, move steadily forward in achieving its limitless possibilities.

Saturday Morning Matinees in the Southeast

The most ambitious experimentation along this line—and one which shows clearly that civic organizations may participate helpfully in the plan—is being conducted in the Southeast under the guidance of the Atlanta representative of the Committee of Public Relations, De Sales Harrison.

Saturday morning matinees have been conducted in that region for about two years. The "key cities" where they are given include

the following: Atlanta, Chattanooga, Memphis, Jacksonville, Birmingham, Montgomery, Charlotte and Columbia. These showings are a permanent part of the community life of those cities and of many smaller towns.

In many instances such organizations as the Rotary, Kiwanis, and Lions Clubs gladly take a share in the entertainment of the youngsters by sending to the theater their quartettes, their minstrel men and the like. Also, they assist toward the success of the morning showings by spreading word of them throughout their membership.

In twenty-three southeastern communities the Saturday matinees are operating with regularity and in as many others occasionally. The children who attend them are usually between twelve and sixteen years of age. They are not shown "baby pictures," by any means. The Committee places before them good action stories which at the same time are free from the sometimes questionable problems of maturity. The pictures of Thomas Meighan, for example, are shown with great success, also those of Harold Lloyd. Whatever the main feature may be, it is always accompanied by a two-reel comedy.

The plan has received splendid support from municipal officials in the southeastern communities, and likewise from the newspapers, which in many places print in advance the program to be presented.

The motion picture exhibitor, it seems to me, should have a really definite place in community life, just as the clergyman or the newspaper editor has, since he, like they, is called upon for something which the people need and want. Through the Saturday morning matinees many exhibitors in the Southeast are going far toward achieving such a place because of their intimate contacts with the parents who send their children to the performances and with the civic and business organizations.

This plan of Saturday morning matinees might be used successfully in almost any community, under the guidance of the Committee on Public Relations. The most important thing, of course, is the selection of a program which shall be entirely fitting. The Committee takes the greatest care that only such programs are shown, and its members will be glad always to cooperate with municipal officials or other good citizens who may wish to make the experiment.

A City of Dreams Coming True

An Editorial from the *Chicago Daily Tribune* of July 16, 1924

ONE of the greatest acts of municipal statesmanship in our history, or the history of any other city, was the device which is now to be adopted or rather extended for the development of the north shore. That device was the exchange of riparian rights for the right to fill in submerged lands up to a given line. The riparian rights were of little or no use or value, the made land was of great value, and the Park Board was thus able to create upon its own plans the wonderful park which is the pride and resource of the city. Rights which were in most cases merely negative and obstructive were extinguished, new property and property values were created, and the community was put in possession of a priceless possession.

The latest application of this plan is the new project for creating what will be a remarkable chain of bathing beaches from Ohio Street to Devon Avenue. The city will surrender to the Lincoln Park Board its riparian rights in front of Clarendon Beach, the pumping station, and all street ends between Diversey Avenue and Devon Avenue. In return the board will permit the city to fill in the submerged lands between the present water line and a proposed outer drive, and will provide, equip and maintain seven large bathing beaches which it is estimated will have a capacity of 200,000. And these facilities can be extended as required. The filled-in lands which the city acquires will have a value of six million dollars.

On the south side a similar development is under way and Alderman Wallace is not exaggerating when he says that when this lake-front development is completed Chicago will be the greatest summer resort in the country. There is no great city with a summer climate surpassing Chicago and no city in the world with a water-front like ours. For we have a beach the whole extent of the city. We lack the spectacular background of San Francisco or Naples, but our water-front is longer and more practicable for enjoyment. When, to the resources of a watering place on an equal scale, are added admirable hotels, theatres, concerts, the Ravinia opera, golf courses and tennis grounds, yacht harbors, boat lines for excursions, roads for motoring, and, in short, all the resources of a great city, we can fairly claim an unrivaled position.

We think the Lincoln Park Board, the Council and its special committee, and also the South Parks Board, for its projects, deserve the thanks of the city for their enterprise and foresight. They are building on magnificent lines. We would also have the people of Chicago pay tribute to the service of Daniel Hudson Burnham, the initiator of the City Plan, and of the late Bryan Lathrop and Francis Tolles Simmons, who as members of the Lincoln Park Board planned and initiated the modern Lincoln Park, especially devising the plan for exchange of riparian rights which has made riparian park development not merely cheap but actually productive of enormous new values. All these men were municipal statesmen, dreamers and practical doers, citizens of the rare breed which makes a city great.

The Problem of Pool-Room Regulation

By Henry Miller

Field Representative, Juvenile Protective Association, Cincinnati

DURING the last year or two the pool-room has become an increasingly serious problem. It appears to have inherited all the vices formerly associated with the now defunct saloon. All too often the pool-room is merely a blind conducted by a person of questionable character, to conceal what is in reality a gambling den, bar-room, or gathering place for the undesirables of a neighborhood. The business of conducting a pool-room is one that is licensed by the city, and in connection with which, therefore, the city assumes a certain obligation and the owner exercises a certain privilege. The young man entering a pool-room should be entitled to expect the protection involved in the fact that the premises are operated under authorization of the city authorities.

An interesting and significant aspect of the pool-room problem was revealed in the Cleveland survey of commercial recreation made in 1919. The survey studies the price of pool-room equipment. It found that the average pool-room table cost about $400, and that $700 was the average price for equipping a pool-parlor with three second-hand tables. The average profit of a three-table room, after investment, labor and up-keep were deducted, was found to be $12 a week. The survey found that equipment houses, city officials, and patrons of pool-rooms were agreed in declaring that a pool-room of less than six tables could not furnish its owner a living wage from legitimate sources. This meant that in Cleveland at that time four-fifths of the existing pool-rooms were not yielding a living wage from legitimate income.

The Juvenile Protective Association is interested in the constructive and not the destructive side of the problem. There is a movement in various parts of the country to eliminate the pool-room entirely, as an evil which defies any remedial measures. The state of Texas has already banned all pool-rooms from its domain. We recognize that the playing of billiards is in itself a wholesome and desirable form of recreation, which unfortunately has been tied up with extremely bad associations. Our aim is to separate the game from its bad associations, and make it the clean sport that it can and should be. We should like to see the billiard-hall so proper and respectable an establishment that a woman would feel free to enter its premises.

In order to ascertain how the municipal regulations pertaining to pool-rooms in Cincinnati compared with the regulations existing in other cities, a questionnaire was drafted which was sent to fifty of the largest cities in the country. The following conclusions are based on the thirty-eight replies received.

During the last few years, laws regulating pool-rooms in various cities appear to have become almost without exception more numerous and severe. In many cities, the progress in municipal administration is reflected in the effective methods of handling the pool-room problem. In three large cities, control over pool-rooms is exercised by a licensing board, which has power to issue, refuse and revoke licenses, and exercises supervision over the licensees. In the city of Detroit, pool-rooms are under the jurisdiction of the Recreation Commission. By this method of control, the pool-room is handled from the recreational point of view, and everything else is subordinated to the recreational aspect of the problem.

In fourteen cities, the minimum age at which minors are admitted to pool-rooms is twenty-one years. In nineteen of the cities, the screening of pool-rooms from street view is prohibited. Seventeen of the cities prohibit all other games from being played in a pool-room. This prohibition includes any card game, and is made in recognition of the fact that the pool-table is very often an excuse for conducting a gambling establishment. A typical city statute of this kind is that of Toledo, Ohio, which reads as follows:

"No card games of any kind shall be permitted in any place at or in which any billiard- or pool-table . . . is kept, used or operated, or in the room in which said tables . . . are located, whether or not said room is divided by a wall or partition."

The majority of the cities provide for investigation of the character of the applicant for pool-room license. The cities of St. Paul, Scranton and Philadelphia require that the applicant for a license be vouched for by a group of citizens, and also that a public notice of the application be filed, to give persons who object to the granting of the license a chance to be heard. In addition, these cities do not allow

pool-rooms in the vicinity of a school.

In nine of the large cities, provision is made for special license inspectors, whose duty it is to investigate and turn in reports concerning the pool-room licensees. The Cleveland city ordinance which authorizes the appointment of a special pool-room inspector reads as follows:

"The Director of Finance shall appoint an Inspector of Billiard-Rooms, whose duty it shall be to obtain information pertaining to all applicants for licenses, concerning their character, the physical condition of the place in which said billiard-room is to be located, and all other information required by the Director of Finance in determining the fitness of said applicants. . . . He shall investigate all complaints, and shall at intervals inspect all billiard-rooms within the city, and make a report of such inspection to the Director of Finance. . . ."

Practically every one of the cities replying to the questionnaire has legal provision for revoking licenses of pool-room owners who have violated the law. In some, revocation is optional, and in others mandatory. A number of the cities state that revocation of license is by far the most effective way of maintaining high standards in pool-rooms. A typical regulation of this sort is the Dayton city ordinance, which reads as follows:

"The City Manager, upon being satisfied that the statements contained in an application for a license are untrue, or that the licensee . . . has been convicted of the violation of any law of the state of Ohio, or any ordinance of the city of Dayton, relating to the regulation of or manner of conducting the business for which the license is granted, is hereby authorized to revoke the license of such licensee."

From an article on "The Pool-Room Problem in Cincinnati," in The Bulletin of The Woman's City Club of Cincinnati, for June, 1924.

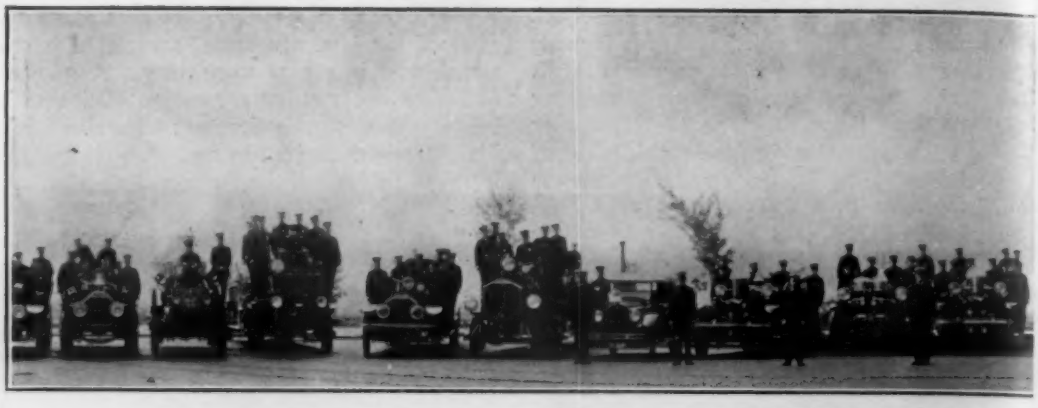
Salaries Paid by Some Cities of 4,000 to 6,000 Population

(Yearly salaries are indicated for each column except the last)

	City Attorneys	Police Judges	Police Chief	Police Force	Fire Chief	Paid Firemen	Volunteer Firemen
Anaheim, Calif.	$1,500	$900	$2,100	$1,560		$1,500	
Anoka, Minn.	800	Court costs		1,080–1,200	1,800	1,200 (driver)	$2 per fire when water is used; $1.50 if no water used
Bartow, Fla.	500 & fees for work on bond issues	200	1,800	1,500			$1 per fire
Brigham, Utah	300		1,200	1,080	300		$2 per hour at fires; $1 per hour for drills
Clarinda, Iowa	300		1,080	1,080	100	1,200	$2 per fire
Excelsior Springs, Mo.	4,000	300	1,200			1,200	$2 per water fire; $1.50 per chemical fire
Fredericksburg, Va.	250	500	1,200	1,140		1,140–1,200	
Glencoe, Ill.	2,400	Fees	2,800	1,800		1,800 (drivers)	$1 per hour
Longview, Tex.			1,800	1,200–1,500	1,800	1,080–1,200	$4 per water fire; $1.50 chemical fire
Marysville, Calif.	600	600	2,400	1,800	900	300–1,620 and 1,800*	$25 per month each to 10 volunteers
Mt. Pleasant, Mich.	500	Fees	1,500	1,500		1,420	$200 per year
Murfreesboro, Tenn.	1,000	1,000	1,020	1,020	1,620	1,020–1,620	$1 per fire plus $1 per hour
Nowata, Okla.	600	Fees	2,100	1,500	1,680	1,200 (Asst. Chief)	$3 per fire
Pittsburg, Calif.	1,020	900	2,400	1,800	480	1,680 (drivers)	
Quitman, Ga.			1,800		1,200	1,080–1,200	$1 per hour
Royal Oak, Mich.	3,500	Fees	2,200	1,950		1,500	
Sanford, Fla.	900	900	2,100	1,500	2,100	1,200	
San Mateo, Calif.	1,500	900	2,100	1,680		1,800	$2.50 per fire when water used
San Rafael, Calif.	900	900	1,800	1,800	900	1,500 (drivers)	
Springfield, Vt.	600†		1,500		300	1,300	$1 per hour
Visalia, Calif.	1,600	600	2,400	1,800	2,100	1,500–1,800	$1,200 to volunteer company (30 men)

* Horsemen, Engineers and Captains, respectively.

† $300 each paid by Springfield Village and the Town of Springfield.



A PART OF WILMINGTON'S

A Century and a Half of Fire Department Progress in Wilmington

By Michael F. Mulrooney
Chief Clerk, Bureau of Fire, Wilmington, Del.

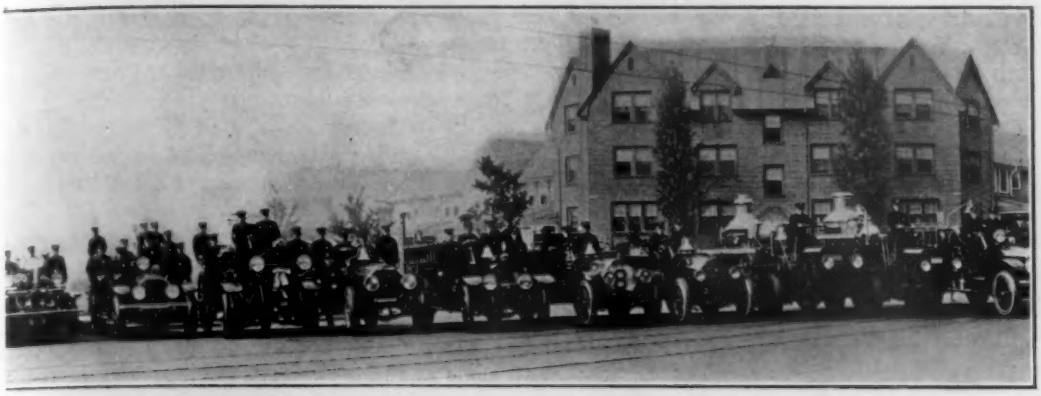
THE Wilmington Fire Department was organized on December 22, 1775, about six months before the Declaration of Independence, by 52 young men of the borough of Wilmington banding themselves together to assist their fellow citizens, whose property was involved in fire. They called their organization the Friendship Fire Company Number 1. Each man pledged himself to furnish one wicker basket, and two leather buckets, the former to carry goods out of a burning building, the latter to carry water with which to extinguish the fire. Soon after organizing, they procured the use of two old hand pumps that the borough authorities had purchased some time before from a French frigate, lying in the Delaware River off New Castle, Del. Leather hose, fastened together with rivets, was used in those days by the firemen.

As time went on, more companies were formed in other sections of the borough, and a man was placed in the Borough Hall tower to give the alarm in case of fire. He struck the borough bell a different number of times to denote the direction in which he saw a fire. All members were required to answer alarms of fire, and failure to do so resulted in a fine. Fines were also imposed for failure to wash off apparatus after a "run," or for taking the engines out after dark, or on Sundays, except in cases of emergency. As a man responded to a fire, he placed a lighted candle in his window to show that he had heard the alarm and had gone. A member passing one's home in which no candle was displayed had to stop and give the alarm.

Uniforms were provided and new apparatus began to appear as still more companies joined the department. The first hydraulin for furnishing the pumps with water appeared in 1819, the first hose carriage in 1832, the hand-drawn steam pumping engine in 1864. In 1868, the first chief engineer of the entire department was elected, each company heretofore having a chief for itself. In 1873, the first horses were used for fire service, in 1879 the telephone, and in 1881 the telegraph alarm system. Aerial ladder trucks appeared also in 1881, chemical and hose wagons in 1895. About this time the city was placed on a district basis, so that all companies would not respond to all alarms of fire.

In 1909, the first automobile pumping engine was placed in service, and shortly thereafter the entire department was motorized, with the exception of one company that had horses until the time they disbanded. On March 16, 1921, Governor W. D. Denney signed the bill creating the paid Fire Department for the city of Wilmington, and on December 1 of the same year the new organization began to function, with ten engine companies, three truck companies and 182 officers and men. One engine and one truck company were dropped in 1922 on account of lack of appropriations, but the truck was put back in 1923.

The Fire Department now consists of three



FIRE-FIGHTING EQUIPMENT

major divisions: the Fire Prevention Division, the School of Instruction, and the Fire Extinguishment Division. A brief account of each of these divisions will tend to show the progress that has been made in our Fire Department since the time of organization in 1775, when the sole duty of a fire department was to put out fires, up to the present date, when the duties of a fire department are to prevent as well as to extinguish fires.

The Fire Prevention Division

Our Fire Prevention Division consists of a fire marshal and two regular fire inspectors. All men disabled or unfit for active fire service are put out on inspection work. The Wilmington Fire Prevention Week campaign plan, known throughout the country for its efficiency, needs no mention here. In addition to this, we have a Clean-up Week campaign each spring. During these two campaigns, all buildings in the city are thoroughly inspected, including alleys, cellars, attics, etc., and hazards removed. During the rest of the year, the fire inspectors and the firemen assigned to inspection duty are continually making inspections of all business houses, stores, manufacturing plants, apartments, theaters, schools and large buildings, special attention being given to the buildings in the "fire belt," which embraces about 44 city blocks.

Fire-escapes are ordered erected where needed, and when hazards are found, the inspectors keep after the guilty parties until the defect is remedied. A record of all inspections is kept for future reference. In other words, we are making Wilmington as safe as possible, so far as fire is concerned. To assist us, we have had a city ordinance passed recently that takes care of such fire hazards as the manufacture, storage, and use of oil-burning equipment, explosives, pyroxilin plastics, carbide, acetylene, benzine, gasoline and kerosene, and also regulates dry-cleaning establishments, paint and varnish stores, fireworks, fire exits, fire-escapes, bonfires, rubbish, open flame, chimneys, lights in stairways, trap-doors, etc. In our campaigns and inspections we reach nearly every citizen of Wilmington, and instruct them in the necessity of fire prevention. Numerous drills, exhibitions, lectures, and publicity campaigns are conducted by the Fire Department, in the belief that one ounce of fire prevention is worth a pound of fire extinguishment.

School of Instruction

Our school of instruction is divided into four parts: the drill tower, drill yard, classroom, and smoke house. The drill tower is a brick tower, 12 x 12 x 68 feet, three sides of which are blank, the fourth side having two windows on each floor. One of the blank sides has false windows painted thereon for ladder practice. The roof is so constructed that men can work on it. The tower is equipped with a stand-pipe having inside and outside connections, and connection on each floor. One-half of the tower is a well-like aperture, used for a hose tower, while the other half has landings on each floor and ladder stairs connecting the landings. The total cost of this tower, mounted in the rear of one of our engine houses, was $3,000. It is used for scaling ladder work, inside hose work, stand-pipe work, and rescue work by both ladder and rope methods and other uses that arise at fires.

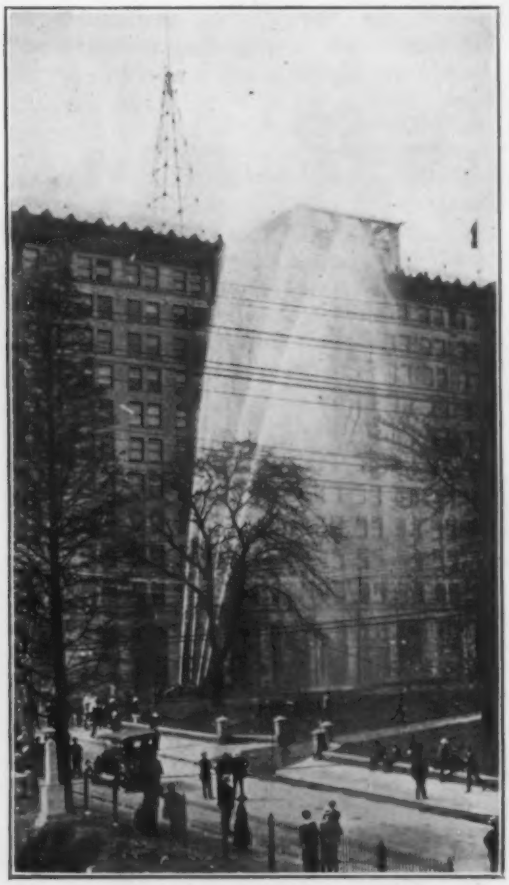
The smoke house is constructed of concrete block, 10 x 10 x 12 feet high, and was built by the men in the department at a cost of $289. Its floor and roof are of concrete, the roof being equipped with ventilator. Three sides are blank, and the fourth has one door and one window. This house is used to show the firemen the various smokes and fumes that they are likely to encounter at a fire. A fire

is built in the house, and different fumes are created. Men go into the building under light smoke or fume conditions without a gas mask, and as the concentration becomes heavier, they don their gas masks. This method also teaches them the proper use and care of the gas mask.

The drill yard is where all hose, ladder work, etc., is done. In connection with the hose work, we have a small wagon, about 2 x 6 feet, mounted on iron wheels, equipped with pumper connections and turret pipe and suctions both large and small. This is used instead of a large apparatus, as it was found that the wear and tear on the apparatus was very great when used in drill work.

The classroom contains a duplicate of every tool used in the Fire Department, a blackboard for class work, and other things necessary to teach the prospective firemen how to fight fires. Large fires are drawn out, and the men are shown how the fires were fought, and how improvements, if any, could have been made.

Wm. H. Todd, shipbuilder of New York City and former member of one of the fire companies of Wilmington, has donated a large solid silver loving cup for the company making the best time in company evolutions at the drill school. The first half of the year is devoted to fire work, stretching in, raising ladders, ventilating, and other things that must be done when a company rolls to a fire. The latter part of the course consists of eighteen company evolutions which are of a competitive nature, and the company making the best time is presented with the Todd cup to hold for one year or until another company makes better time at the evolutions. This rivalry increases the efficiency of the men participating, and teaches them to "use their heads."



A SPECTACULAR TEST OF FIRE STREAMS IN WILMINGTON

Fire Extinguishment and Salvage Work

Our Fire Extinguishment Division consists of the following: 4 Ahrens-Fox triple combinations, 750 gallons capacity; one Ahrens-Fox, 1,000 gallons capacity; two American-LaFrance, 750-gallon triple combinations; one LaFrance 1,000-gallon triple combination; and one Thomas 600-gallon triple combination in active service; four steamers, 700 to 900 gallons capacity in reserve. We have nine combination hose and chemical wagons, two aerial trucks, one city service truck, two supply wagons, five officers' cars, 25,000 feet of hose (15,000 feet of which is new), and all the necessary tools and appliances required for modern fire fighting. We have 165 men and officers working on a two-platoon basis, 10 and 14 hours each shift. Each company has twelve men, two officers, two engineers and eight firemen. There are in service 120 Gamewell non-interfering fire alarm boxes, and 25 more are to be placed in service during the coming year. There are tape registers and two gongs in each house, along with the usual equipment of poles, charts, beds for each of the 165 men, baths, showers, etc. All houses are in first-class condition, with hose towers attached, separate oil rooms, gasoline tanks underground, etc., bunk rooms, recreation rooms, and cellars.

One truck, one engine and an assistant chief respond to all local alarms in residential districts; one truck and two engines and an assistant chief in the business district. One truck, two chief officers and three engines respond to box alarms in residential districts, and in the fire belt and for schools, hospitals, theaters, public institutions, etc., two trucks, two officers and four engines respond on a first alarm. We have first, second and general alarms, the city being covered by the fire

operator when other companies are out. Each house is connected up to a central switchboard, located in the Municipal Building.

Our engine companies consist of one triple combination engine, one combination wagon, 2,500 feet of hose, first aid equipment, one salvage cover, one salvage hose, and the usual equipment of door openers, hydrant pumps, nozzles, pipe holders, gas masks, etc. A captain, a lieutenant, two engineers and eight firemen run the engine companies.

Supply wagons are used to carry gasoline and oil to pumpers while working at fires.

The truck companies consist of one ladder truck, equipped with scaling ladders, Browder life-saving machine, first-aid equipment and stretchers, acetylene cutting outfits, portable search-lights, battering rams, the usual truck equipment, and salvage equipment, consisting of 100 feet of 1-inch rubber hose, the same as engine companies, to be used for wetting down after a fire, or for small fires; this line being equipped with a 2½ to 1-inch reducer. Twelve salvage covers are carried on trucks to cover merchandise, furniture, etc., beneath a fire; buckets, mops, brooms, shovels, augers, etc., carried to clean up after a fire and to clear rooms of water and débris.

All men are instructed in first aid and rescue work, and must be efficient on salvage work. We have saved the citizens of Wilmington thousands of dollars by our salvage work alone, though the cost of our salvage equipment is negligible.

Organized Conservation of Vision a Social and Economic Need

Defective eyesight in the public schools is costing the taxpayers of the nation at least $130,000,000 annually, it is asserted by the Eye Sight Conservation Council of America, which, in a statement sent to directors of summer schools throughout the country, urges organized conservation of vision as a social and economic need.

The Council points out that poor eyesight is responsible for much of the retardation in schools, and makes public the results of investigations showing that a large proportion of backward children have visual defects.

Accompanying the statement is a report revealing that heavy moral and financial losses arise from this evil. Approximately 25 per cent of all school children in the United States, the Council finds, are retarded in their studies and fully one-third of this retardation is conservatively estimated as due to defective vision.

If this is a correct estimate, there are at least 2,000,000 school children in the United States one or more years behind in their studies because of defective vision, says the Council's report.

Of 7,319 school children found with defective vision in the public school eye clinic of one of our large cities, 72 per cent were backward in their studies. An examination of 2,185 rural school children in a mid-western state disclosed that of those retarded nearly 60 per cent had visual defects, according to the Council.

"The correction of visual defects results in a marked improvement in school progress," the report continues. The records of 20,000 cases sent to a public school eye clinic for correction of refractive errors show that from 60 to 70 per cent of the children were classified as backward, mentally deficient, stupid or habitually left back. The careful follow-up system proved that after their defective vision had been corrected, 70 to 80 per cent of these children progressed and took their place in the class with the normal average child. The reason the remaining 20 to 30 per cent did not progress was because their retardation was due to causes other than defective vision.

"The proportion of retardation in another group, all with visual defects, was found to be 85.4 per cent. One year later, after the defective eyes had been corrected by glasses, only 17 per cent of those corrected continued to be backward in their studies.

"Furthermore, it has been found that the proportion of retardation increases with an increase in the degree of visual defect. Pupils who have less than one-half normal vision are much more retarded than those with lowered vision of a lesser degree."

A Parade That Helped Get Playgrounds

Blue Island, Ill., enthusiastically voted "Yes" when the question came up as to whether or not the city should take advantage of the state law making it possible to establish playgrounds and secure a mill tax.

The children themselves had much to do with the success of the elections, for 700 of them turned out in a parade just before the voting took place to show the citizens how badly they wanted playgrounds. VOTE FOR PLAYGROUNDS, WE WANT PLAYGROUNDS, WE NEED PLAYGROUNDS, were some of the slogans on the signs they carried.

With the children were their pets, ranging from a snail to a team of ponies. The Mayor had issued a proclamation closing the main street during the period of the parade, and motor cops, city police and Boy Scouts were on hand to see that the children and their pets were well protected. The city officials and citizens of Blue Island were delighted with the parade and plan to make it an annual event.

—*The Playground*, August, 1924.

Chamber of Commerce Activities in Public Affairs

City of 18,000 Votes $1,069,000 for Civic Improvements

LAKELAND, FLA.—The bond issue of $1,069,000 for civic improvements, voted by this city of 18,000 population on June 10, was strongly advocated by the Lakeland Chamber of Commerce. This organization sent out communications to the voters previous to the election, calling their attention to the importance of the various proposed projects, and on the day of the election each voter was called by telephone and urged to vote. The bond issue carried by a majority of more than six to one.

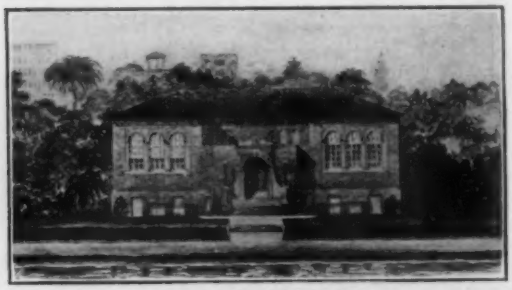
This decision of the voters will give Lakeland a group of municipal buildings which we believe will be among the finest in this state. The plans for these buildings were drawn by Franklin O. Adams, Jr., of Tampa, in a contest between a selected number of Florida architects, conducted by the city of Lakeland some time prior to the election. In announcing the contest the city stated that the drawings judged to be the most appropriate for the new public buildings would be accepted and the prize money awarded in the event that the bond issue carried. The prize-winning drawings were placed on exhibition some time ago and have been widely praised by visitors from all sections of the country.

The complete list of items included in the issue is as follows:

Site for new City Hall and municipal auditorium.	$100,000
Erection of City Hall and municipal auditorium	275,000
Site and equipment of 80-acre athletic field....	87,000
Erection of municipal library building.....	75,000
Establishment of new fire station on the north side of the city.....	25,000
Establishment of municipal abattoir.....	40,000
Erection of municipal hospital for white patients	300,000
Erection of municipal hospital for colored patients	25,000
Construction of suitable stockade and other buildings for the care of prisoners.....	20,000
Erection of combination jail and central fire station	40,000
Improvement and creation into parks of the shores of certain lakes within the corporate limits of Lakeland.....	17,000
Carrying out of needed improvements at Rose-lawn Cemetery.....	15,000
Establishment of public comfort station in Munn Park	10,000
Erection of fire station on the south side of the city	20,000
Purchase and installation of modern type of municipal incinerator.....	20,000

An announcement has been made by city officials that work on these various projects will be started within a short time.

T. J. APPLEYARD, JR.,
Manager, Lakeland Chamber of Commerce.



PUBLIC LIBRARY

HOSPITAL

OBSERVATION TRAIN, WATERBURY CLEAN-UP CAMPAIGN

Observation Train Aids Clean-up Campaign

WATERBURY, CONN.—Acting upon a suggestion that a special effort be made to improve the appearance of the back yards along the railroad in this city, the Clean-up Committee of the Chamber of Commerce conducted a rather unique tour of inspection in connection with its spring clean-up campaign this year. Through the Chairman of the Committee, arrangements were made with the railroad company for a special observation train to run for several miles in either direction from Waterbury station, so as to give the members a more definite idea of actual conditions. Following a luncheon, over 100 members were taken by special trolleys and taxicabs to the station where the train waited, and the entire trip was covered in less than one hour's time. On the tour notes were made of those places where conditions were especially objectionable, and the Committee later got in touch with the various property owners and secured their cooperation in making the appearance of their premises more attractive to those entering or passing through the city by rail. The accompanying illustration shows the members assembled for the trip.

Shortly after this event a special committee was appointed by the Chamber to cooperate with the local Health Department in organizing a general clean-up week. This effort accomplished some unusually good results.

Another activity of the Chamber along the line of city beautification this year was its cooperation with the Park Department in a tree-planting campaign. Over 500 trees were planted, including Norway maples, American elms, silver maples and pin oaks, each from 10 to 12 feet high. These were supplied by the joint committee at a cost of about $1 less per tree than the usual retail prices.

ALVIN E. GILLETT,
Secretary, Waterbury Chamber of Commerce.

A Community "Wedding"

BLUEFIELD, W. VA.—When Graham, Va., just across the state line from Bluefield, W. Va., decided to change its name to Bluefield, Va., the Bluefield Chamber of Commerce initiated a big community "wedding" at which the Governors of both states were present to help celebrate the advent of Greater Bluefield. The community is now officially known as Bluefield, W. Va.-Va.

Not only was the celebration the largest ever held in southern West Virginia, and conducive to a splendid spirit of good feeling and cooperation on both sides of the state lines, but it enabled the Publicity Committee of the Chamber to "cash in" on the novelty of the event by a remarkable amount of excellent community publicity. Pictures on the order of the one herewith were published in newspapers from coast to coast. The Universal Pathé News Pictorial had a cameraman

E. F. MORGAN, GOVERNOR OF W. VA., (LEFT) AND E. LEE TRINKLE, GOVERNOR OF VA., AT THE CELEBRATION

on the scene, and the moving pictures were shown in several thousand theatres. A second cameraman was present and took a reel of pictures which are now being shown throughout Virginia and West Virginia. Rotogravure sections of many large dailies were glad to use pictures.

Just 38 years ago two blue-grass farms occupied the area which is now Bluefield, W. Va. The city's population is now in excess of 20,000, and Bluefield, Va., has 6,000. The city manager type of government in the West Virginia city has been outstandingly successful.

CONRAD BREVICK,
Secretary-Manager, Bluefield Chamber of Commerce.

Municipal Control of Aircraft

NEW ORLEANS, LA.—Acting upon a suggestion submitted by the Civic Bureau of the New Orleans Association of Commerce, the Commission Council of this city on May 13 last adopted the first ordinance regulating the conduct of airships while flying over the city of New Orleans. It is now

Keeping Winter Roads Open

You realize how serious the food situation, how great the fire risks, how extensive the business losses when a city is crippled by snow. Hundreds of municipalities have found the answer — "Caterpillar" Tractors for snow removal.

Is your city prepared? Right now is the time to insure the safety and health of your community against next Winter's snow blockades. New York has 50 "Caterpillars;" and congested business streets are quickly cleared by these powerful snow-fighting machines. Lincoln, Nebraska, with 5-Tons; Harrison, N. Y., with 2-Tons; Sheboygan, Wisconsin, with a 10-Ton; are typical of the many cities in the northern states which have found the "Caterpillar" the most dependable and effective power for snow removal work, as well as for road making and maintenance throughout the year.

Investigate now what "Caterpillar" Tractors have accomplished and saved for many northern cities, counties and townships. We can give you convincing facts and figures on the "Caterpillar" for snow removal and public works of every kind. Write us today.

"THE NATION'S ROAD MAKER"

There is but one "Caterpillar"—Holt builds it.

THE HOLT MANUFACTURING CO., Inc.

PEORIA, ILLINOIS STOCKTON, CALIF.

Eastern Division: **250 W. 54th Street, New York**

CATERPILLAR
Reg.U.S. Pat.Off.

unlawful for any person to fly at a height of less than 1,000 feet over the densely populated sections of the city and less than 500 feet above the sparsely settled areas, in accordance with the boundaries set forth in the ordinance. These heights have been made as low as is considered wise by experienced aviators. The need for action of this kind has become especially evident within the last few months, when aviators have been known to fly as low as 200 feet above the ground while passing over the business section of the city. The act further prohibits the operation of aircraft at an angle from engine to rudder in excess of 10 degrees with the ground, or at an angle at the wing tip in excess of 45 degrees with the ground. These rulings do not apply, however, to aircraft flying over Audubon Park, City Park and the New Orleans Fair Grounds.

The throwing of papers, pamphlets or other matter from planes while in flight has also been made an offense by this ordinance. Since 1918, when a dummy was first dropped from an airplane over the business section of this city, the problem of how best to regulate the throwing or dropping of missiles and papers from the air has become increasingly serious.

LLOYD ADAMS,
Secretary, Civic Bureau, New Orleans Association of Commerce.

Chamber of Commerce Cooperates with Free Employment Office

PATERSON, N. J.—Any city will be well repaid for developing a well-run, free employment office. In those cities where there is a State or Federal Free Employment Office, the active cooperation of the city will often greatly increase the efficient functioning of the office.

I have been engaged for two and a half years by the Paterson Chamber of Commerce to cooperate in the work of the State Free Employment Office in this city. In that time the records show that this office has consistently been among the first few of the 170 cities having state employment offices.

No matter how well managed these employment offices are, they must have cooperation from the industries in their locality, including both the employers and the workers. Active representation in these offices by the city government or, perhaps better, by the chamber of commerce, will almost insure this.

A brief description of the methods used and the results accomplished by the Paterson office will give a good idea of the significance to the city of this work.

The work is divided into the two large divisions of male and female workers. A woman is in charge of the female placements, handling all classes; while the men's division is separated into two departments, "skilled" and "unskilled," in charge of two men. The "unskilled" department handles laborers, farm hands, hotel and restaurant men, and day workers, and the other department places all classes of skilled men.

When men or women having a trade or profession apply for work, they are registered on a 4 x 6-inch card. This records their name and address, telephone, occupation, age, race, birthplace, whether married or single, and number of dependents. It also includes their last three employers, the kind of work done, and the length of employment. If no suitable position is open, the card is filed under the occupation classification, and the applicant is notified as soon as an opportunity occurs.

When a request for help is received, it is recorded on another 4 x 6-inch card, giving name and address, telephone, occupation, wages, hours, probable duration of work, nationality, age limit, married or single, and place to apply. A space for "remarks" takes care of special information. If no suitable applicant is immediately available, the files of the particular class of worker wanted are referred to, and the telephone or mail is used to call them in, or the application is held until a suitable applicant comes in. The day workers and unskilled workers make the office their headquarters, and can usually be sent out at once when a call comes in.

It will be understood what a saving of time and energy is achieved where a competently operated office of this sort serves as a clearing-house for the great mass of employment in the city. The figures given here for the actual placements made in the Paterson office during the first six months of 1924, will show what a volume of work is handled:

	Skilled	Unskilled	Total
Male	2,309	2,202	4,506
Female	1,843	4,255	6,262
Total	4,152	6,457	10,768

I believe any city or chamber of commerce may count on hearty cooperation from the Federal and State Departments of Labor in furthering plans for a free employment office.

HOMER S. TRECARTIN,
Representative, Paterson Chamber of Commerce.

Boy Scouts' Civic Service Medals

AT ITS ANNUAL MEETING ON JUNE 17 LAST, THE FORT WAYNE CHAMBER OF COMMERCE PRESENTED BRONZE MEDALS TO TWENTY LOCAL BOY SCOUTS IN RECOGNITION OF THEIR PERFORMANCE OF CIVIC SERVICE DURING THE PAST YEAR. THIS AWARD, WHICH WAS FIRST MADE IN 1923, IS BASED ON SUCH SERVICES AS VOLUNTARY POLICE DUTY, FIRE PREVENTION WORK, AID IN CONVENTION PARADES, "BETTER YARDS" ACTIVITIES, ETC.

Autocars to Build Illinois Roads

Fleet of 12 Autocar Trucks Delivered to Illinois Highway Department

A fleet of twelve four-cylinder 2- to 3-ton Autocar trucks was recently delivered by the Autocar Sales & Service Company of Missouri, the St. Louis branch of The Autocar Company, Ardmore, Pa., to the Division of Highways of the Illinois State Highway Department.

These trucks are to be used in building concrete roads at Grant Park, Ill., about fifty miles south of Chicago. Previously the State Highway Department had used a fleet of nine Autocar trucks in the construction of a road from Carbondale to Bosky Dell, Ill. The trucks have pneumatic tires and rotary dump steel bodies, with partition gates that permit the hauling by each truck of two batches of concrete mixture.

Autocar motor trucks, because of their short wheelbase handiness and their tremendous power and stamina, are regarded by contractors and city officials as the standard equipment for modern municipal highway construction work.

The Autocar Company
ESTABLISHED 1907
Ardmore, Pa.

Branches in 45 Cities

Autocar
gas *and* electric trucks
EITHER OR BOTH - AS YOUR WORK REQUIRES

Send with your Letterhead

THE AUTOCAR COMPANY
Box 2000, Ardmore, Pa.

Without obligation, please send me more information regarding economies resulting from combined use of gas and electric trucks.

The City's Legal Rights and Duties

Conducted by A. L. H. Street, Attorney at Law

Changing the Use of Public Property

FREQUENTLY, the courts are called upon to determine the right of municipalities to alter the use of property previously dedicated to a special object.

It seems that the narrowest limitation of municipal power in this regard applies to gifts by individuals to cities for specific purposes.

Where land was dedicated for use as a "plaza," the dedicator intending that the land should be used as a public square, a town had no right to construct on the tract a town hall containing a jail, according to the holding of the California Supreme Court in the case of Kelly v. Town of Hayward, 219 Pacific Reporter, 749. The court said, in passing:

"It might be suggested at this point that it would seem that the intention of the dedicator and the terms of the dedication as interpreted by the predecessors of the present town authorities, by leaving this land unoccupied by any edifice for a period of 45 years, would be an almost conclusive argument upon the question of such intention; also, that if the present board of trustees has discretion to utilize a portion of this block for town buildings, some future board might claim that under their discretion a corporation yard and rock pile for the employment of prisoners, and other very useful adjuncts to the administration of the economic affairs of the town, might be located thereupon, until the entire space was fully so occupied."

But that adherence strictly to the dedicated purpose will not be enforced where adherence would be unreasonable, is well illustrated by a decision of the Massachusetts Supreme Judicial Court (89 Northeastern Reporter, 177), dealing with Boston Common. It was held that there was no invalid diversion of the use of the Common in constructing a subway under it and in providing approaches to a subway station; there being no material interference with the surface. The court said:

"What are the uses to which the property may be put? Only two are specifically mentioned, one for a training field and the other for a cow pasture. The inhabitants are to use it in common. . . . This dedication was very soon after the arrival of the first colonists in this part of New England. . . . The words chosen to designate the use indicate an intention that the place should be kept for occupation by the public as a common, in ways of which the two specified are only typical. As years have gone by, there is no longer any occasion for common occupation of this land as a cow pasture, and in the sense in which the words 'training field' were then used, this is almost true of this kind of use. The proper execution of the public trust requires that the property be still kept open as a common for occupation by all the people, in ways that are kindred to those in which a common would ordinarily be used under such a dedication in the early years of the colony. In general, it seems to have been the purpose and the endeavor of the public authorities, for almost three centuries, to preserve the common for uses, as nearly as possible under changing conditions, like those indicated by the original dedication. Not only have grass and trees been cultivated and spaces set apart for games and for the evolutions of soldiers, but walks have been laid out, monuments erected, fountains set up, and other provisions made for the comfort and pleasure of the public in their use of the place.

"As against the donors and the interest which they undertook to serve, it is plain that, except in the exercise of the right of eminent domain, the common could not be appropriated to a public use entirely inconsistent with the general character of the use originally intended. Whether it could be taken in this right [under the power of eminent domain] it is unnecessary in this case to decide, as the statute does not purport to take property in the common under the right of eminent domain. . . . It is possible that there has been such an acceptance of the dedication of the original donors by the town and city of Boston and by the legislature under different statutes, and such a creation of a public trust in this particular, as to deprive the public authorities of the right, that they otherwise would have, to devote the property to a public use of an entirely different kind."

The right of defendant city to change the location of a statue representing an Indian group, from one site to another in Lincoln Park, Newark, was recognized by the New Jersey Court of Chancery, in the case of Coles vs. City of Newark, 121 Atlantic Reporter, 782.

The statue was given in 1895 by Coles to the city. He selected the site, but there was no condition against removal. When the city proceeded toward replacing the statue on a slightly less prominent site in the same park, a short distance from the original site, Coles sued to restrain execution of the plan. Denying the injunction sought, the court said:

"The claim of the complainant that the mutual selection of the site by him and the city before the completion of the gift implied a condition of

Baker Auto Truck Snow Plow on Ohio County Highway.

WALTHAM, MASS. say if they purchase more snow plows they will certainly be Bakers.

MILWAUKEE, WIS. say their street department is well pleased with Baker Snow Plows.

ULSTER COUNTY, N.Y. say they have 15 Baker Plows—very satisfactory.

ROCHESTER, N. Y. say they are well pleased with their Baker Snow Plows.

Send for List of Owners

Baker Tractor Snow Plow operating on City street.

It is time to select your snow moving equipment for the coming winter. Be sure you choose snow plows that have weathered the storm and have been proved dependable. Baker Snow Plows have performed the bulk of the snow moving in the snow regions in the past. They were chosen because they did a thorough job and stood up under the load. That is why they were selected to do the snow moving for the leading State Highway Departments, Counties and Cities as well as small cities and villages.

Baker Snow Plows are built for both motor trucks and tractors. The Baker Auto Truck Snow Plow with the well known Patent Tripping Blades is still the leading truck plow. Then there are the Baker Tractor Snow Plows built for tractors from the heaviest to the lightest —all made especially for the power used. All dependable Baker Snow Plows.

Provide for your Snow Plow requirements now.
Send for 48-page catalog.

THE BAKER MFG. CO.
503 Stanford Avenue
Springfield Illinois

BAKER SNOW PLOWS
For Motor Trucks and Tractors

irremovability is not apparent. The gift had no strings to it; it was outright, for public purposes—the ornamentation and embellishment of the city, and possibly, but remotely, for charity. The city became trustee for the public, forever and always, so long as the monument endures and serves the public interest. I quite agree with the contention of the city that the gift worked a change of title and that the donor lost all property rights therein, but I cannot give assent to its assertion that 'if that is so, it is within the power of the city to do what it will with the monument, even so far as to dispose of it by sale or demolish it, if in the judgment of the present officials of the city of Newark such disposition of it is advisable.' Not so long as the monument serves the public use. To sell or demolish it, arbitrarily, would be an abuse of the trust the city owes the public, and would be enjoined upon the application of the cestui que trust—the public; or the donor could intervene.. . . . Only when it ceases to serve the public will the trust end.

"As long as the city acts in good faith in the execution of its trust, i. e., uses the monument in a reasonable manner to beautify the city, equity cannot interfere with its discretion. If it is kept in mind that the real trust of the city is the adornment of the town, and that the monument is only an instrument to that end, the case is simple. When the monument was erected, the city trustee selected the present site as the one then most suitable for carrying out the trust. The donor approved. Now if, to enhance the beauty of Lincoln Park, the city sees fit to remove the 'Indian Group' to another point in the park, not remote or obscure, but, as I understand, in close proximity to other monuments of as great or even greater artistic value, to make room for an imposing and inspiring war hero monument, and which, for obvious reasons, has the call of the day, I fail to see how, reasonably, it can be said that the city is not discharging its trust in letter and spirit; or, to put it more closely, how can it be said that it is abusing its trust? That the city at one time thought that the present site of the 'Indian Group' was then the appropriate place for the fulfillment of the trust is not an obstacle to the selection of another, and the donor's acquiescence in the earlier location does not imply a privilege to obstruct the choice of a new one. Suppose the site had since been surrounded by factories, would it not have been within the discretion—yes, would it not have been the duty—of the city to choose another and a fit place for the monument? And could the donor object?"

It has been decided that the following uses constituted illegal diversions: Construction of a railroad across a public square (67 Illinois Supreme Court Reports, 540). (But in a Philadelphia case [175 Pennsylvania Supreme Court Reports, 28] it was held that a passenger railway might be extended within a park to enable persons of moderate means to visit the place.) Establishment of a public highway through a park where it does not constitute a pleasure driveway (210 Illinois Supreme Court Reports, 308). Maintenance of a pumping station on land dedicated as a "common, park, or boulevard, and for no other purpose" (171 Massachusetts Supreme Judicial Court Reports, 575).

But it has been decided that erection of a building for a public library, with rooms for the library directors, did not violate a dedication of land for park purposes (150 California Supreme Court Reports, 64).

Sundry Items of Municipal Law

City Held to Have Power to Use Public Money and Vote Bonds for Municipal Auditorium and Community Center Building

The power of the city of St. Louis to use public money and vote bonds for a proposed municipal auditorium and community center building was upheld by the Missouri Supreme Court in the case of Halbruegger vs. City of St. Louis, 262 Southwestern Reporter, 379. The court said:

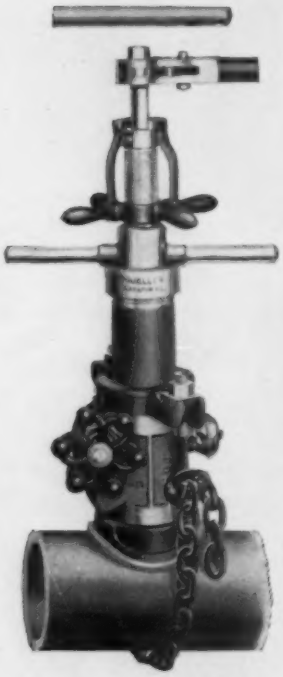
"In many matters of local, and even more general concern, the need of the citizens of a municipality for a convenient and adequate place of assemblage is too obvious to require particularization. The arts and sciences require places for display of their works. The cause of education can be served in many ways by such a structure. When all these things are considered, we find no difficulty in holding that, under the generally approved rule . . . the court cannot say the purpose, evidenced by the proposal in question, is not a public one. . . .

"It is urged that there is an intent to use the proposed structure, in some instances, for purposes not strictly public, in the proper sense. A secret intent of certain individuals, if such an intent exists, cannot be invoked to render illegal a purpose which in itself is legal. It is not to be assumed that a building adapted for public purposes will be used for others which are of such a character as to be unlawful. . . . In case any illegal use of the building is attempted, the courts will be open for proper proceedings to prevent it."

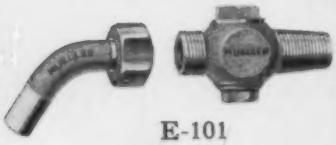
Anti-Peddler Ordinance Held to Be Unconstitutional

An ordinance of defendant city purported to forbid peddlers and solicitors to call at dwelling-houses bearing the sign "No Peddlers." The ordinance was declared by the United States District Court for the Northern District of California to be unconstitutional, in the recent case of Real Silk Hosiery Mills vs. City of Richmond, Calif., 298 Federal Reporter, 126. The ordinance was held to be specially objectionable as applied to solicitors for orders to be filled in interstate commerce. The court said:

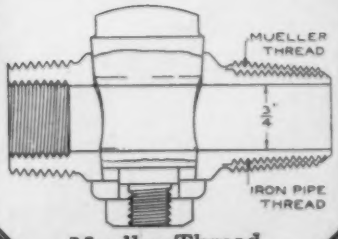
"The ordinance aims at prevention of trespass, annoyance, conflict, disorder, and breach of the peace, otherwise of reasonable apprehension. In principle it is legitimate exercise of local self-government or police power, in no wise encroaching upon interstate commerce; for the latter does



"B" Tapping Machine



E-101



Mueller Thread

Stop Time Waste in Tapping

Keep tab on your tappers time. When the job takes too much time — examine both machine and tools. You will probably find them old and worn. A small investment in new equipment will likely save much more in labor costs.

The New MUELLER *"B" Machine*

is used by practically every Water Works in the United States, because it lowers tapping costs and will safely tap and insert a corporation stop from ½" to 1"—and will ***tap only*** up to 2".

Used in connection with Mueller Corporation Stops with genuine Mueller Thread, it insures an absolutely perfect joint at the main.

Detailed descriptions and prices on request.

Mueller Co.,
Decatur, Ill., U.S.A.

Branches: 145-149 W. 30th St., New York City; 1072-76 Howard St., San Francisco; 2468 Hunter St., Los Angeles

not license the offensive conduct by the ordinance denounced nor confer immunity against consequent punishment.

"But though the ordinance, even as the householder's sign, recognizes the legal and popular distinction between peddlers and solicitors or agents, it undertakes to extend its ban beyond the householder's. It would visit the consequence of trespass upon solicitors guiltless of any offending. A householder's ban upon peddlers is none to solicitors, and so the latter may there lawfully enter and solicit contracts, though the former are excluded from trade. Where the householder permits solicitors, the city cannot forbid.

"Hence application of the ordinance to plaintiff's solicitors is unwarranted interference with interstate commerce, and deprivation of liberty of contract and of property without due process of law."

Municipal Power to Supply Lighting Facilities

Authority to a municipality to provide for lighting its streets and supplying light to its inhabitants implies, in the absence of special restriction, power to make proper contract with an individual or corporation therefor, held the Florida Supreme Court in the case of State vs. Pinellas County Power Company, 100 Southern Reporter, 504. In the same case it is held that power "to provide for the lighting of streets of the city," and to do such other "acts as shall seem necessary and best adapted to the improvement and general interest of the city," and to raise by tax and assessment upon all real and personal property all sums of money needed for the improvement and good government of the city, etc., is sufficient to authorize the municipality to erect and maintain an adequate plant for supplying electric lights and power to the city and its inhabitants, or to make a proper contract with an individual or corporation to do so.

Statute Requiring Operators of a Certain Class of Motor Vehicles to Furnish Bonds—Upheld

The right of a state to single out a class of motor vehicles operated for hire and to require their operators to give bond or carry insurance to idemnify against liability for injuries caused in the operation of such vehicles was sustained by the highest court of the land in the recent case of Packard vs. Banton, 44 Supreme Court Reporter, 257. Overruling a contention that such a law in force in New York cities of the first class was unconstitutional as being unjustly discriminatory, the Court said:

"If the state determines that the use of streets for private purposes in the usual and ordinary manner shall be preferred over their use by common carriers for hire, there is nothing in the Fourteenth Amendment to prevent. The streets belong to the public and are primarily for the use of the public in the ordinary way. Their use for the purpose of gain is special and extraordinary, and generally, at least, may be prohibited or conditioned as the Legislature deems proper. Neither is there substance in the complaint that street cars and omnibuses are not included in the requirements of the statute. The reason, appearing in the statute itself, for excluding them, is that they are regulated by the Public Service Commission Laws, and this circumstance, if there were nothing more, would preclude us from saying that their non-inclusion renders the classification so arbitrary as to cause it to be obnoxious to the equal protection clause."

Obstructions for Private Purposes Upon Public Sidewalks and Streets Cannot Be Licensed by City

That cities are powerless to license the obstruction of public sidewalks and streets for private business purposes is a proposition of law reaffirmed lately by the Appellate Division of the New York Supreme Court in the case of Kahabla vs. Schwab, 199 New York Supplement, 551. Although the particular obstructions dealt with in this case were gasoline pumps located near curbs, the opinion shows that the legal principle involved extends to all kindred obstructions, including news-stands. The Court quotes from an earlier decision on the subject, in which the New York Court of Appeals upheld the conclusions reached:

"It is elementary law that the public is entitled to the free and unobstructed use of city streets, and that any obstruction of such streets for private use interferes with the public right, constitutes a nuisance, and may be removed at the suit of any interested citizen. There are certain exceptions to this general statement, as where there are temporary obstructions, or obstructions which the courts have considered as not amounting to a substantial interference with traffic, and as permissible and not in conflict with the purposes for which streets and highways are maintained. . . . The primary purpose of streets is for the use of the public for travel and transportation, and any private obstruction or encroachment which interferes with such use is a nuisance. Under these general rules, it has been held repeatedly that storekeepers cannot use any part of the sidewalk for their show-cases, show-windows, and other like purposes, as the right of the public is absolute and paramount, and the public has the right to the use of the entire street."

Court Enjoins Amusement Park as Nuisance in Residential District

Owners of property in a residential district were held by the Pennsylvania Supreme Court to be entitled to enjoin establishment of an amusement park in the district, in the recent case of Edmunds vs. Duff, 124 Atlantic Reporter, 489. In the course of the opinion, it was said:

"No man has a right to take from another the enjoyment of the reasonable and essential comforts of life and, consequently, cannot commit acts on his own premises calculated to interfere with the reasonable enjoyment by others of their homes. Even music, however elevating and enjoyable at times, and depending, of course, on its character, may be continued so long as to become an annoyance to those compelled to remain in the immediate vicinity. In fact, the general trend of decision has been to hold that any noise, whether of musical instruments or the human voice, or by mechanical means, or however produced, may be a nuisance, especially if its tendency is to draw together in the vicinity of a person's residence or place of business large crowds of noisy and disorderly people."

NEWARK PREPARES FOR SNOW REMOVAL
Two New Huge Loaders Purchased to Clear Streets Rapidly.
NEW SNOW LOADER ENABLED CITY TO HANDLE SNOWSTORM SUCCESSFULLY
WISDOM AND FORESIGHT OF MAYOR AND PUBLIC WORKS DEPARTMENT IN PURCHASE OF NEW STYLE MACHINE PROVED ITSELF TO SATISFACTION OF CITIZENS IN LAST HEAVY DOWNFALL.
Purchase of Another Snow Loader To Be Urged By Commissioner Blake
NEW LOADER BY DULUT FIGHTING
Street Railway Company Keeps Tracks Clear; Cars on Time.
Snows as Deep Now as They Were in '80s
BUFFALO, WORKING NIGHT AND DAY TO 'DIG SELF OUT,' TO FACE NEW TRIALS
Teams and Men to Continue Snow Removal Task Today as Storm Threatens.
AUTO CLUB COMPLAINS; CARS HANDICAP WORKERS—TEMJOY
Snow Loader Is a Great Labor Saver

Fight snow as you fight fire

Whenever a city allows a heavy snowfall to lie on its streets, that city pays heavily in business losses. And every hour multiplies these losses. In one New York snow storm alone, it is estimated that the merchants suffered a trade loss of sixty million dollars.

And more important than this, the fire menace is greatly increased.

Fire-fighting apparatus is stalled, or delayed long enough to allow small blazes to grow into big, dangerous and costly fires.

Our largest cities, and a great many smaller ones, are now fighting snow as they fight fire—as one of a city's greatest menaces. They are clearing their streets with the Barber-Greene Snow Loader—which has proved beyond question to be the swiftest, most efficient and economical method of snow removal known.

No other method has ever approached the record made in Albany, where a Barber-Greene loaded more than 2,000 cubic yards of snow into trucks in 10 hours. In Milwaukee a side-discharge Barber-Greene loaded a 3-trailer train with 21 cubic yards of snow in 3 minutes. In Boston a Barber-Greene operated for 112 consecutive hours, and could have continued indefinitely. Hand labor—could it have endured such grilling and protracted work—could have attained only a fraction of the Barber-Greene speed.

The Barber-Greene that saves its cost in a single snow storm, will pay for itself again in one summer's road work. When the snow boom is replaced with a bucket loader boom, the machine is ready to handle stone, sand, or any other bulk material.

Our new booklet, "Snow Insurance," pictures and describes how many of our cities are successfully combatting the winter's worst menace. Send for it now, for now is the time to plan your coming snow battle.

BARBER-GREENE COMPANY—*Representatives in Fifty Cities*—515 W. Park Avenue, Aurora, Illinois

BARBER GREENE

Portable Belt Conveyors . Self Feeding Bucket Loaders

Coal Loaders . Automatic Ditch Diggers . Snow Loaders . . . . Coal Feeders

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

Zoning Notes

Prepared by Frank B. Williams

Author of "The Law of City Planning and Zoning"

From data collected by the Zoning Committee of New York (233 Broadway), and from other sources
For further information, Mr. Williams may be addressed in care of
THE AMERICAN CITY MAGAZINE, 443 Fourth Avenue, New York

Recent Zoning Ordinances

SAN BUENAVENTURA, CALIF.—Ordinance, June 9, 1924

WILMINGTON, DEL.—Ordinance, July 29, 1924

NEW BRUNSWICK, N. J.—Ordinance, August 19, 1924

BUFFALO, N. Y.—Amendment of Ordinance, July 23, 1924 (use, height and area)

ITHACA, N. Y.—Ordinance, May 22, 1923

The San Buenaventura ordinance defines a "single family dwelling" as follows: "A detached house designed for the use of a single household, including two or more people living as a family and wherein not more than five people are sheltered for hire."

The Wilmington Zoning Ordinance seems to be the first ordinance of this sort passed in the State of Delaware. The "Proposed Ordinance" printed in February, 1924, contains valuable notes and diagrams.

The New Brunswick ordinance seems to be the first zoning ordinance passed in New Jersey since the enactment of the new zoning law (1924, ch. 146) already noted and commented on in these columns, both in connection with the well-known Nutley case, and otherwise.

Recent Zoning Decisions

NEW JERSEY.—In the six New Jersey Supreme Court cases noted below, all applications for mandamus, the well-known Nutley case (Ignaciunas v. Risley, 1 N. J. Adv. R. 1023) is cited by the applicant as conclusive in his favor. In the first of these cases, that case is distinguished; in the others it is followed.

Hench v. City of East Orange, 2 N. J. Adv. R. No. 26, p. 510 (June 28, 1924). Mandamus to compel the building inspector to issue a permit for the erection of two garages, contrary to the zoning ordinance of the city, refused. It was contended that, under the New Jersey decisions the ordinance was invalid. But the validity of the entire ordinance is not involved. The statute under which the zoning ordinance was passed authorizes municipalities to pass ordinances reasonably required for the protection of the public health and safety and the general welfare; and the presumption is that the purpose of the municipality in passing the portion of the ordinance in question was that indicated in the statute.

Huppert and Teitelbaum v. Haque et al, Board of Commissioners of the City of Jersey City, 2 N. J. Adv. R. No. 20, p. 348 (May 17, 1924). Conversion of garages into stores and erection of stores.

King v. Favier, Building Inspector of Township of Lyndhurst, 2 N. J. Adv. R. No. 21, p. 358 (May 24, 1924). Alteration of building to make it suitable for a store.

Plymouth Co. v. Bigelow, Superintendent of Buildings, Newark, N. J., reported in The Sun, July 22, 1924, p. 1. Erection of four-story apartment and store building.

R. and B. Realty and Construction Co., Inc., v. Jelleme, Building Inspector of City of Passaic, 2 N. J. Adv. R. No. 21, p. 356 (May 24, 1924). Erection of three two-family houses.

White v. Bower, Building Inspector of Borough of Ridgefield, and the Borough of Ridgefield, 2 N. J. Adv. R. No. 21, p. 357 (May 24, 1924). Erection of office building.

In these five cases mandamus to compel the issuance of a permit for the erection of the structure in the district contrary to the provisions of the zoning ordinance, was granted, on the authority of the Nutley case.

NEW YORK. *City of New York v. Holzman*, reported in New York Law Journal, August 7, 1924, p. 1523 (Supreme Court, Special Term). Suit to enjoin the removal of sand from lands owned by defendants, and situated in a residential district. The defendants are not erecting any building on the lands, nor are they using them for business purposes, except in so far as is involved in the removal of the sand. *Held* that it does not come within the uses prohibited in a residence district by the New York City zoning resolution. That the use is but temporary is conceded by the city and is shown by the fact that as fast as excavations are made and the sand carted away the openings in the ground are filled up with earth hauled in the same carts as are used to remove the sand. Assuming, however, that it was the intention of the zoning resolution to prevent such use of vacant premises, such resolution is in the opinion of the court invalid. Sand is valuable property, and the owner of land upon which there is sand or other valuable property cannot constitutionally be prevented from severing and selling it. No authorities on the question were cited by either party or discovered by the court. Motion for injunction denied.

People ex rel. Smith v. Walsh, reported in New York Law Journal, July 12, 1924, p. 1335. Certiorari from a decision of the Board of Standards and Appeals permitting the erection of a garage for more than five cars in a residence district created by the New Yok City zoning resolution. *Held* that the board could have taken this action under its authority to vary the provisions of the resolution to avoid practical difficulties or unnecessary hardships; in which case this court would have been limited to the inquiry whether it had jurisdiction. Instead, it granted the application on the ground that the community interest would best be served and the integrity of the zoning resolution be best maintained by permitting the garage. The case is therefore before this court on its merits, and is referred to a referee for the taking of further testimony.

OHIO. *Kahn Bros. Co. v. City of Youngstown*,

Bellflower Avenue, Cleveland, Ohio. Tarvia-built 1905.

Both were new in 1905— Today the Tarvia Street is Still Good

CLEVELAND, 1905! Bellflower Avenue paved with Tarvia! Traffic in those days was almost entirely "horse-and-carriage." Occasionally a motor car passed — a puffing, high-seated affair.

Time brings its changes. The old-time cars are junk. But the Tarvia pavement on Bellflower Avenue, after nearly 20 years of constant traffic, is as good as the day it was laid.

Nor is this exceptional. At remarkably small cost, Tarvia streets can be kept good for many years. And in addition: Tarvia pavements will not wave, roll or rut. Tarvia pavements are skid-proof because of their granular surface.

Thousands of Tarvia streets and roads have proved that—for the money spent—Tarvia gives more mileage and the most years of satisfactory pavement service.

On request, we will gladly send you descriptive booklet, construction data and specifications.

Tarvia
For Road Construction Repair and Maintenance

The Barrett Company

New York	Chicago	Philadelphia	Boston
St. Louis	Cleveland	Cincinnati	Pittsburgh
Detroit	Kansas City	Birmingham	Dallas
Minneapolis	Salt Lake City	Bethlehem	Lebanon
Youngstown	Milwaukee	Toledo	Columbus
Baltimore	Syracuse	New Orleans	Rochester

In Canada:
THE BARRETT COMPANY, Limited

Montreal	Toronto	St. John, N. B.
Winnipeg	Vancouver	Halifax, N. S.

Common Pleas Court of Mahoning County, reported in 25 Ohio Nisi Prius Reports. New Series, p. 31; also in 22 Ohio Law Bulletin, June 16, 1924, No. 13. The provision of the Youngstown Zoning Ordinance forbidding the erection of an apartment house in a given district is valid, and the ordinance constitutional. The enforcement of the ordinance will not be enjoined on the ground that the restriction is for the benefit of adjacent property owners and for purely aesthetic purposes. On the contrary, the erection of such a house in the locality in question would be contrary to the public health, safety, convenience and general welfare. The decision discusses the entire subject exhaustively and cites numerous authorities.

Santangelo v. City of Cincinnati, Superior Court of Cincinnati, June 18, 1924. The official syllabus of this case, briefly referred to in the August "Notes," is as follows:

1. A building permit does not constitute a contract or create any vested interest.
2. The Building Commissioner of the City of Cincinnati has jurisdiction and discretion to revoke a building permit granted by him when the application contains material misrepresentation or the work authorized thereunder is proceeding in violation of law, including the Occupational Tax Law.
3. Where a building permit is granted prior to the effective date of the Zoning Law and is revoked by Building Commissioner after said law goes into effect, subsequent permission to proceed is subject to the provisions of such Zoning Law when substantial construction has not already commenced.
4. The Cincinnati Zoning Law (Ordinance No. 71-1924, of Cincinnati, Ohio) is a valid and constitutional ordinance.
5. The provisions of the Cincinnati Zoning Ordinance are independent and the provisions thereof restricting residential property from invasion by business enterprises is a reasonable regulation well within the police power of the municipality.

The court in its opinion considers the entire question of the constitutionality of zoning at length and from many points of view.

Recent Zoning Literature

The *National Municipal Review* for September, 1924, will contain a paper by Edward M. Bassett, Esq., Counsel of Zoning Committee of New York and Director of Legal Division of Regional Plan of New York and Its Environs, entitled "Constitutionality of Zoning in the Light of Recent Court Decisions." The same author has contributed to the *Brooklyn Eagle* of July 13, 1924, a more popular article on "How Zoning Halted Exodus of Residents from New York City."

In the *American Bar Association Journal* of March, 1924, p. 185, will be found a contribution from J. P. Chamberlain and Sterling Pierson upon "Zoning Laws and Ordinances."

A "Statement and Evidence Submitted on Pending Zoning Ordinance, to City Council of Cincinnati on the 24th day of January, 1924," has been issued by the United City Planning Committee of Cincinnati. In this sixty-page pamphlet will be found the statements of experts and the reports of leading authorities with regard to zoning from the point of view of health, recreation, housing, social welfare, real estate values, engineering, constitutionality, experience in other cities, etc. The pamphlet is an important contribution to the literature of the subject.

The Municipal Bond Market

By Sanders Shanks, Jr.
Editor, *The Bond Buyer*

THE ever advancing and seemingly impregnable strength of the municipal bond market has withstood surprisingly the heat of the summer and the absence of many investors and bond men. The summer is usually the dullest season of the year, but this year the market continues to advance with the year.

During the early part of August, it seemed as though there was going to be a scarcity of new issues, and consequently when Baltimore, Md., offered $8,510,000 4s and 5s, a group of New York and Baltimore bankers, headed by Kountze Brothers, purchased the issue at an approximate yield of 4.08 per cent.

Later in the month the City of Utica, N. Y., offered for sale various issues of 4 per cent bonds which were taken by a syndicate, which paid 3.99 per cent.

The greatest demand at present is for short-term investments, owing to depressed business conditions and the resultant abundance of idle funds. The State of Massachusetts has just borrowed $2,000,000 at 2 per cent for three months.

Another interesting bond sale was that of the State of Illinois, which sold $9,000,000 Highway 4s and $3,000,000 Soldiers' Compensation 4¼s at a net interest cost to the state of 4.08 per cent and 4.11 per cent respectively. In June of this year, when it was considered that the market was exceptionally good ($280,000,000 bonds were underwritten at that time), Illinois sold a similar issue of Highway bonds at 4.29 per cent, a difference of 1/5 of 1 per cent interest cost.

Every attractive bond issue that has been floated this month has been sought by a great list of eager bidders, each having figured his profit on the smallest margin justifiable to handle the issue. The result was, in one particular case, that the purchaser of the bonds only covered his nearest competitor by one cent on a thousand dollar bond.

Municipalities which have had the good fortune or good judgment to have profited by this market have saved from one-quarter to one-half per cent in interest over borrowing done a year ago.

The following tabulation shows a few of the most important issues floated during the month:

Amount	Borrower	Maturity	Coupon Rate (%)	Net Yield (%)
$703,000	State of Maryland...	1927-39	4½	4.05
8,510,000	Baltimore, Md.....	1925-42	5 & 4	4.08
1,624,000	Trenton, N. J.....	1926-60	4¼	4.12
411,297	Utica, N. Y.....	1925-44	4	3.99
776,750	Minneapolis, Minn....	1925-44	4¼	4.18
3,330,000	Cincinnati, Ohio.....	1925-43	4½	4.22
4,000,000	Denver, Colo.....	1943-62	4½	4.31
2,000,000	Los Angeles.....	1925-64	4½	4.45
1,750,000	Charlotte, N. C.....	1926-65	4½	4.45
1,035,000	Greensboro, N. C.....	1926-45	4¼	4.57
500,000	Tampa, Fla.....	1929-48	5	4.73
950,000	Miami, Fla.....	1935-54	4¼	4.84
4,350,000	San Antonio, Tex....	1925-64	5	4.90

Photograph shown above taken in 1904

Pounded 21 Years by Traffic

and still in splendid condition

Laid in 1903—twenty-one years ago—the Trinidad Lake Asphalt paving on Cadillac Square, Detroit, is still carrying heavy traffic with but little signs of wear.

What other bituminous paving material could equal this record? Yet it is just one of hundreds proving the remarkable durability and economy of Trinidad—a native-lake asphalt.

Trinidad Lake Asphalt pavements not only hold world's records for long-life, but for low cost per year of service. They are attractive, resilient and noiseless.

We have some interesting data regarding this nature-made paving material. Write for it at once.

THE BARBER ASPHALT COMPANY

PHILADELPHIA

New York St. Louis Chicago Pittsburgh San Francisco Kansas City

TRINIDAD LAKE ASPHALT

Hints, Helps and Happenings

City Managership as an Established Profession

NOTWITHSTANDING the fact that city managership is one of the youngest of the professions in America, the following table, compiled by THE AMERICAN CITY with the co-operation of the City Managers' Association, indicates that it is already offering a real career for men of ability who desire to devote their lives to municipal administration. The table lists only the men—59 of them—who have already had service of five years or more in this new profession:

A complete list of city manager cities, corrected to March, 1924, with a record of the number of cities which have adopted the plan each year, will be found on page 14 of the 1924 *Municipal Index*.

Name	Now City Manager of	No. Cities Served	Date of First Appointment as a City Manager
C. Arrasmith	Fillmore, Calif.	1	October, 1918
C. R. Ashburner	Stockton, Calif.	4	September, 1908
W. E. Baumgartner	Alpena, Mich.	2	May, 1918
Philip H. Beauvais	Royal Oak, Mich.	2	May, 1918
Edw. A. Beck	Lynchburg, Va.	5	March, 1914
C. A. Bingham	Lima, Ohio.	4	April, 1915
E. P. Bridges	Griffin, Ga.	1	December, 1918
R. H. Brinkley	Suffolk, Va.	1	August, 1919
O. E. Carr	Dubuque, Ia.	4	March, 1914
F. G. Connelly	Estherville, Ia.	1	May, 1919
Abram Cook	Waycross, Ga.	2	January, 1917
W. M. Cotton	Ashtabula, Ohio	4	October, 1917
J. J. Curle	Cynthiana, Ky.	1	January, 1918
Oscar Dobbs	Palatka, Fla.	3	June, 1919
J. B. Duchastel	Outremont, Que.	1	July, 1918
O. J. S. Ellingson	Sherman, Tex.	1	April, 1916
I. R. Ellison	Muskegon, Mich.	3	April, 1916
H. J. Graeser	Temple, Tex.	2	August, 1918
J. O. Gregg	Iowa Falls, Ia.	1	March, 1917
W. P. Hammersley	Norwood, Mass.	1	March, 1918
H. V. Hennen	Denton, Tex.	1	May, 1919
L. J. Houston, Jr.	Fredericksburg, Va.	1	October, 1918
Wm. T. Howie	Towanda, Pa.	1	April, 1918
V. J. Hultquist	Alcoa, Tenn.	1	July, 1919
W. P. Hunter	Roanoke, Va.	1	September, 1918
A. V. Hyde	Taylor, Tex.	1	April, 1918
F. L. Jenkins	Portland, Mich.	1	January, 1919
O. O. Johnson	Sturgis, Mich.	2	May, 1918
George Johnston	Cadillac, Mich.	1	April, 1918
S. S. King	Rome, Ga.	1	April, 1919
W. D. Kochersperger	Mifflinburg, Pa.	1	January, 1919
Fred H. Locke	Grand Rapids, Mich.	1	May, 1918
G. J. Long	Webster City, Ia.	1	April, 1917
T. W. McMillan	Mt. Pleasant, Iowa	1	April, 1916
Eugene Masters	St. Augustine, Fla.	1	April, 1918
B. I. Miller	West Hartford, Conn.	1	July, 1919
J. K. Mitchell	Glasgow, Mont.	1	February, 1919
C. M. Osborn	Kenosha, Wis.	2	January, 1918
Harrison G. Otis	Clarksburg, W. Va.	3	August, 1915
W. J. Oviatt	Villisca, Ia.	1	May, 1919
R. L. Pickett	High Point, N. C.	1	March, 1919
W. E. Reynolds	Alma, Mich.	1	May, 1919
E. A. Rolison	Redding, Calif.	1	August, 1918
Wilder M. Rich	Alexandria, Va.	3	August, 1918
Kenyon Riddle	Kelsey City, Fla.	4	July, 1914
R. W. Rigsby	Durham, N. C.	2	May, 1919
Martin S. Ruby	Lubbock, Tex.	1	December, 1917
L. L. Ryan	McCracken, Kans.	1	May, 1919
J. H. Sanders	Crystal Falls, Mich.	1	April, 1917
C. C. Schults	Wilmette, Ill.	1	August, 1917
H. H. Sherer	Glencoe, Ill.	1	January, 1914
J. E. Smith	Clark, S. Dak.	1	May, 1912
Geo. W. Thompson	Westmount, Que.	1	April, 1913
Theo. H. Townsend	St. Johns, Mich.	1	July, 1919
H. F. Traxler	Janesville, Wis.	2	August, 1918
Dan H. Vincent	Big Rapids, Mich.	1	July, 1918
Bert C. Wells	Atchison, Kans.	2	July, 1917
W. H. Wigglesworth	Durango, Colo.	1	April, 1919
H. L. Woolhiser	Winnetka, Ill.	1	May, 1917

Preparing for Fire Prevention Week

NEW campaign literature, distributed for the first time this year, has been issued by the National Fire Protection Association, Boston, Mass., for use in connection with the 1924 Fire Prevention Week campaign. This includes the striking poster here reproduced, the original being in two colors, and measuring 12 x 16 inches.

FIRE PREVENTION WEEK POSTER

The new Fire Prevention Week Handbook is a 50-page manual for the guidance of committees planning Fire Prevention Week observances and of teachers and school officials interested in school fire prevention exercises. It is available at 15 cents per copy. Other material now ready for distribution includes a 4-page leaflet, "The Story of Fire Prevention Week," Fire Prevention Week stickers and speech texts, and a poster prize contest announcement.

Growth of the Safety Council Movement

THAT the promotion of human safety is fundamentally a community problem is evidenced by the mobilization of civic interests in 25 cities of the country to combat industrial and public accidents within the last six months. The number of communities now engaged in organized safety work is 60, with a combined population of more than 20,000,000 and a registration of 2,500,000 motor vehicles.

A SPEEDY TRUCK

20% MORE POWER
17 MILES TO THE GALLON
WILLYS-KNIGHT MOTOR

$1095
Chassis f. o. b. Detroit

The advent of the new FEDERAL-KNIGHT marks a new era in truck transportation.

One hundred million dollars worth of Federal trucks in service testify to Federal efficiency and durability. The world-famous Willys-Knight motor adds new economies and satisfaction hitherto unknown in the motor truck field.

No valves to grind. No carbon-cleaning. Upkeep costs are cut 50%.

Long life is an attribute common to all Federal trucks. And long life has won international fame for the Willys-Knight motor. How long, no one knows. *No Willys-Knight motor has ever been known to wear out.*

The amazingly low first cost, and matchless economy in service, make this new Federal the greatest value ever offered in a high-speed truck.

FEDERAL MOTOR TRUCK COMPANY
DETROIT, MICHIGAN

FEDERAL-KNIGHT

A SPEEDY BUSINESS TRUCK

As defined by the National Safety Council, a Class A community safety council is an independent organization directed by a paid and full-time secretary-manager and operating on a yearly budget of approximately $10,000. Forty-two cities now have Class A councils, as follows:

Atlanta, Ga.	Milwaukee, Wis.
Baltimore, Md.	Minneapolis, Minn.
Battle Creek, Mich.	Nashville, Tenn.
Bellingham, Wash.	Newark, N. J.
Buffalo, N. Y.	Norfolk-Portsmouth, Va.
Charleston, W. Va.	Paterson, N. J.
Chattanooga, Tenn.	Pittsburgh, Pa.
Cincinnati, Ohio	Portland, Ore.
Cleveland, Ohio	Providence, R. I.
Denver, Colo.	Reading-Berks, Pa.
Des Moines, Iowa	Richmond, Va.
Detroit, Mich.	Rochester, N. Y.
Everett, Wash.	St. Louis, Mo.
Flint, Mich.	St. Paul, Minn.
Fort Wayne, Ind.	San Antonio, Tex.
Grand Rapids, Mich.	Seattle, Wash.
Jersey City, N. J.	Spokane, Wash.
Kansas City, Mo.	Springfield, Mass.
Knoxville, Tenn.	Syracuse, N. Y.
Louisville, Tenn.	Washington, D. C.
Memphis, Tenn.	Wilmington, Del.

More than 5,000 men and women influential in business, civic, social and educational circles are volunteer workers in local safety councils. These people are giving freely of their time and money in the work of preventing public accidents. A recent survey of schools shows that more than 2,000,000 school children are taking part in the community safety work as a part of their regular classroom work.

Government Aid to Housing in Canada

From a statement dated July 22, 1924, of the Department of Health of Canada, it is learned that up to March 31, 1924, 6,244 houses had been erected in 179 municipalities with the aid of government loans under the provisions of the General Project for Housing, enacted December 3, 1918. This law provides for the loan of moneys by the Federal Government of Canada to the Provincial Governments, the latter to loan said moneys to housing societies, companies or individual owners of lots. The total amounts loaned to the provinces up to the date mentioned were:

Manitoba	$1,975,000.00
New Brunswick	1,525,000.00
Ontario	9,350,000.00
British Columbia	1,701,500.00
Quebec	7,369,689.62
Nova Scotia	1,537,000.00
Prince Edward Island	50,000.00
	$23,508,189.62

Real Estate Boards Adopt Advance Code of Ethics

COMPLETE revision of the code of business ethics of the National Association of Real Estate Boards was voted at the closing general session of the Association's annual convention last month. "Underlying all is the land. Upon its wide utilization and widely allocated ownership depend the survival and growth of free institutions and of our civilization," the preamble of the new code states, setting forth the social responsibility of the Association and of the local real estate boards that make up its membership. "The realtor is the instrumentality through which the land resource of the nation reaches its highest use and through which land ownership attains its widest distribution. He is a creator of homes, a builder of cities, a developer of industries and productive farms. Such functions impose obligations beyond those of ordinary commerce."

The Busy Bee and the Traffic Lamp

A swarm of bees that clustered on the red globe of a traffic lamp on Main Street, Orange, N. J., one afternoon recently, attracted the attention of a large crowd of passers-by. While traffic officers and others debated on how best to dispose of the visitors, the problem was solved by an old colored man, who, seeing in the swarm a worth-while prize, gathered the bees into a small wooden box and departed.

The Legal Aspects of Milk Control

In *Public Health Reports* for July 18, 1924, James A. Tobey of the National Health Council, New York, has assembled a list of 121 court decisions of the highest courts of appeal in 31 states and the Federal Government which deal with some phase of milk regulation. In commenting on these decisions Mr. Tobey says, in part:

"On few public health subjects is there such a unanimity of opinion by courts of last resort as on milk control. The regulation of milk and milk supplies has been repeatedly upheld as a valid exercise of the police power. The police power is the inherent power of the state to enact laws, within constitutional limitations, to promote public safety, health, morals, comfort, and welfare.

The World's Greatest Iron Fence Builders

Experience Makes Perfect

Safeguard Your Reservoir With a STEWART Iron Fence---

a fence that is BEAUTIFUL—
and PERMANENT—
and STRONG against unlawful invaders.

Our long experience of forty years qualifies us—
to advise you as to the type of fence best adapted to your particular needs,
to submit designs from our own draughtsmen or to use your specifications, and
to give PROMPT SERVICE AT PROPER PRICES.

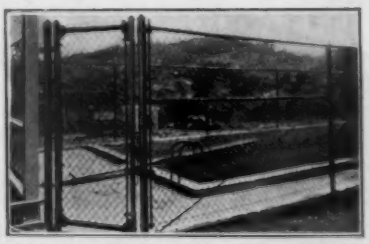
Protect the Children's Playgrounds, Too.

A practical fence for parks and playgrounds, as well as for municipal waterworks, sewage disposal plants, golf courses, tennis courts, etc., is the STEWART Chainlink Wire Fence, made of genuine open-hearth galvanized fabric with interlocking mesh, with fittings of pressed or forged steel.

Are Your City's Park and Cemetery Entrances Beautiful?

The world's most beautiful designs in ornamental iron fences and gates are available for your city's use in our "Book of Designs C." Hundreds of these fences and gates have been installed by municipal cemeteries.
Let us know your requirements in either Iron or Chainlink Wire Fence, and we will submit designs and estimates of cost.

THE STEWART IRON WORKS COMPANY, INC.
216 STEWART BLOCK **CINCINNATI, OHIO**
"The World's Greatest Iron Fence Builders"



it was a power possessed by the states before they granted certain rights to the Federal Government, as incorporated in the Constitution, and it has never been relinquished by them. The police power is the basis of all public health work within the state. The United States Supreme Court, final arbiter on all matters arising under the Federal Constitution, has held on several occasions that milk regulations form a valid exercise of this police power."

Among the activities which have been upheld in these decisions are:

Delegation of the power of control over milk to boards of health
Fixing of standards of milk
Regulation of the inspection of dairies and of cattle
The tuberculin test
Prevention of adulteration of milk, and penalties for it
Licensing of milk dealers, dairies and sellers
Destroying impure milk or that handled contrary to regulations
Pasteurization or certification requirements.

Food Handlers Regulated

THE *California State Board of Health Bulletin* reports that Santa Ana has adopted an ordinance requiring the physical examination of food handlers, and that Orange will take similar action. Ordinances requiring the supervision and medical examination of food handlers are in force in Pasadena and Long Beach, and Bakersfield is considering a similar measure.

Per Capita Costs of Police Service in Twenty-Seven Cities

THERE are 33 cities in the United States with over 200,000 population. The Kansas City Public Service Institute has secured police statistics for 1923 from 27 of them and has compiled the following table from statistics received. The populations and areas used in the calculations are from the United States Bureau of the Census:

City	Per Capita Expenditures for Police Service	Population per Square Miles
Boston	$5.60	17,850
Philadelphia	5.16	15,020
New York	4.90	19,850
Newark	4.68	18,840
Providence	4.58	13,640
Detroit	4.43	15,180
St. Louis	4.33	13,190
San Francisco	4.30	12,840
Buffalo	4.20	13,800
Los Angeles	4.00	1,830
Washington	3.90	7,910
Baltimore	3.54	9,790
Kansas City	3.45	6,020
Seattle	3.24	5,840
Rochester	3.20	9,900
Cleveland	3.08	15,770
Indianapolis	3.07	7,850
Milwaukee	3.05	19,080
Portland	2.92	4,330
St. Paul	2.70	4,640
Minneapolis	2.50	8,220
Atlanta	2.48	8,320
Louisville	2.45	11,500
Denver	2.43	4,690
Cincinnati	2.36	5,720
Columbus	2.13	11,560
Akron	1.40	10,210

County and Municipal Expenditures, 1917 and 1923

A COMPILATION of total and per capita costs of government in the counties and municipalities of New Jersey has been made by Sedley H. Phinney, Secretary of the New Jersey State League of Municipalities, and is being sent to mayors and finance directors throughout the state. The costs (exclusive of school systems) are summarized in the following table:

Number	Governmental Units	Expenditures in 1917 — Total	Expenditures in 1917 — Per Capita*	Expenditures in 1923 — Total	Expenditures in 1923 — Per Capita*
21	Counties	$18,442,806.09	$6.14	$32,642,119.16	$9.70
47	Cities	32,090,427.50	18.10	56,201,206.10	28.20
24	Towns	4,598,624.03	13.50	7,468,847.29	18.70
208	Boroughs	4,000,420.06	11.85	8,673,119.89	16.80
234	Townships and 3 villages	3,503,582.13	6.96	6,597,140.45	13.75

Per capita costs have been used instead of tax rates because they are thought to be a more reliable criterion by which to compare. Tax rates are affected by the percentage of true to assessed valuations and these are very irregular throughout the state. Per capita costs, on the other hand, give a good basis for comparison except in the case of shore resort cities, in which the presence of large floating populations not counted in the census figures increases per capita costs. For example, the present average per capita cost in the shore cities is $77.50 and in the non-resort cities the average is $30.50.

Additional tables show the distribution of these costs between various functions of government, namely, police, fire, cleaning and maintenance of streets, collection and disposal of refuse, street lighting, public health and parks and recreation. For the entire municipal group, including cities, towns and boroughs, police expenditures are 15.5 per cent of the total in 1924. Fire department costs are 12.2 per cent of the total.

In a statement accompanying the report, Mr. Phinney pointed out that figures recently made public by the United States Census Bureau indicate that per capita costs of government in cities all over the country have about doubled in the last ten years. He said that the public expects and demands a better scale of municipal services than even a few years ago. These include municipal playgrounds, gymnasiums, swimming pools and golf links, better police regulation of traffic, municipal clinics for tuberculosis, dentistry, and other services; public water-supplies, with larger quantity, better quality and higher pressure, and many other services too numerous to mention. The great increase in the number of automobiles and the building of skyscrapers are factors that have added materially to costs of municipal government.

The complete report, a document of 34 mimeographed pages, can be had from Mr. Phinney at $1 per copy.

* Based on estimated population for 1917 and 1923. These per capita figures apply to the 39 largest cities and 37 largest boroughs and to all the counties, towns, townships, and villages.

IN CLOSE AGREEMENT

The CONSUMERS GAS CO. of Reading, Pa., recently compared the reading of their VENTURI STATION GAS METER and a drum type meter by two two-hour tests. THE TWO METERS AGREED WITHIN ONE PERCENT.

Incidentally, the Venturi Tube at this plant is only 10 inches diameter, but through it 160,000 cubic feet of gas per hour can be measured accurately.

The purchase and installation cost of a Venturi is remarkably low.

The Venturi Register not only gives the total "cubic feet" (middle dial) but also continuously indicates (lower dial) and records (upper chart) the rate of flow in "cubic feet per hour."

Ask for Bulletin No. 86

BUILDERS IRON FOUNDRY
PROVIDENCE, R. I.
"Builders of the Venturi for 33 Years"

Municipal and Civic Publications

Prices do not include postage unless so stated

Elements of Forestry.—By Franklin Moon, B. A., M. F., Dean, New York State College of Forestry at Syracuse University; and Nelson Courtlandt Brown, B. A., M. F., Professor of Forest Utilization, New York State College of Forestry at Syracuse University. 1924. John Wiley & Sons, Inc., New York. Second edition, revised and reset. XVII + 409 pp. Illustrated. $3.50.

The new edition of this text-book has been entirely brought up to date with special reference to the progress of forestry in the last ten years. There are two new chapters, on State Forest Activities and National Forest Activities. Others besides students in the classroom will find of value the material it contains, and will be directed by its use to sources of information on a subject which either directly or indirectly affects every individual.

Forestry Almanac.—Compiled and edited by The American Tree Association, 1214 16th Street, N. W., Washington, D. C. 1924. VIII + 225 pp. Illustrated. $2.00.

This is the first and only book of its kind in the world. It contains in almanac form all the important available information regarding the forestry movement, showing simply and directly what has been done through organized agencies and what may yet be accomplished. Charles Lathrop Pack, President of the Association, says, "We must put 81 million acres of idle land to work growing trees." This volume presents the means by which such a goal may be approached.

Facts on the Public School Curriculum.—In the Research Bulletin of the National Education Association, Vol. 1, No. 5. 48 pp. Tables. Containing material under the following heads: Shaping the Nation's Growth Through the Public School Curriculum; Statutory and State Board of Education Requirements Relative to Elementary Schools Curricula; Facts on Time Allotments for Subjects in Elementary Schools and Junior High Schools; Vote of Expert Opinion on Most Helpful Books Dealing With Curriculum Problems, together with Selected Annotated Bibliography; New Courses of Study for Old. (Apply to the Association, 1201 Sixteenth Street, N. W., Washington, D. C.)

Suggested Tests for Patrolman.—By Fred Telford and F. A. Moss. 12 quarto pp. In Public Personnel Studies, July, 1924. The preliminary subject matter deals with the causes for the general dissatisfaction with the police administration, and the qualifications of a patrolman. The tests suggested for use in selecting patrolmen represent the authors' best judgment, based on existing civil service and psychological practice, and both the form and content of the tests have been tried out, although not technically standardized. 35 cents. (Apply to Bureau of Public Personnel Administration, Institute for Government Research, 26 Jackson Place, Washington, D. C.)

City Managership as a Profession.—By Joseph A. Cohen, Harvard College. 21 pp. as supplement of the National Municipal Review for July, 1924. Setting forth the qualifications, training, tenure, salary, promotion, and public relationships of the city manager. (Apply to the National Municipal League, 261 Broadway, New York, N. Y.)

Town Planning Institute of Canada.—The Annual Conference Number (June, 1924) of The Journal of the Town Planning Institute of Canada, giving the major portion of the transactions, together with reports from the provinces which may be taken to reflect the status of town planning throughout the Dominion. 24 quarto pp. Map. (Apply to John M. Kitchen, Secretary-Treasurer of the Institute, Ottawa, Ontario.)

Transportation of Milk by Motor Truck.—18 quarto pp. in Public Roads, a journal of highway research published by the Bureau of Public Roads of the U. S. Department of Agriculture. July, 1924. Illustrated. Giving the results of a survey of milk transportation for Philadelphia, Detroit, Baltimore, St. Paul, Minneapolis, Milwaukee, Cincinnati, and Indianapolis. Prepared by Henry R. Trumbower, Economist, U. S. Bureau of Public Roads. 10 cents. (Apply to the Government Printing Office, Washington, D. C.)

Diesel and Oil Engineering Hand Book.—By Julius Rosbloom. 1924. Technical Publishing Company, Los Angeles, Calif. Second Enlarged Edition, 780 pages. $5.

A very complete and practical book of instructions and ready reference on oil engines of the high-compression type, describing also compressors, pumps, and such equipment as is necessary in oil engine installation, and Diesel electric drives. The book is profusely illustrated and contains a large number of questions and answers, tables, formulae, etc. The text includes the general discussion of the leading types of Diesel engines; a detailed description of the various types of Diesel machinery with operating instructions, emergency repairs, etc.; a chapter on Diesel electrical drives; a chapter on technical terms and formulae for the practical operation of this type of prime mover; a discussion of auxiliary machinery, fuels and lubricants, and other text particularly useful to the municipal power-plant engineer.

Municipal Street Cleaning in Philadelphia.—An analysis of the problem of street cleaning and refuse collection and disposal, with an evaluation of the results attained during the first year of city-wide municipal operation. Prepared by the Bureau of Municipal Research of Philadelphia. June, 1924. 109 pp. Chart, tables. (Apply to the Bureau.)

The Relation of Sewage Disposal to Water Supply.—By Jack J. Hinman, Jr. Presented at the Fifth Conference on Sewage Treatment, at Ames, Iowa, October 22-24, 1923. Bulletin 64 of the Engineering Extension Department, Iowa State College, Ames, Iowa. May 7, 1924. 12 pp. Illustrated. One of the general papers presented at the Conference. (Apply to author, Post Office Box 313, Iowa City, Iowa.)

A Major Traffic Street Plan for Los Angeles.—Prepared for the Committee on Los Angeles Plan of Major Highways of the Traffic Commission of the City and County of Los Angeles, by Frederick Law Olmsted, Harland Bartholomew, and Charles Henry Cheney, Consulting Board. P. P. Sharples is the Chief of Staff. 1924. 72 quarto pp Maps, diagrams, charts, tables. A close study of the main body of the city, with a consideration of thoroughfare planning throughout the metropolitain district, with the idea of providing a broad, practical, well-balanced scheme for handling traffic, to which the city may gradually adjust itself. (Apply to the Committee, 215 Wright-Callender Bldg., Los Angeles, Calif.)

Prejudice or Foreigners.—By Charles F. Weller, of the League of Neighbors, Elizabeth, N. J. An 8-page folder, pleading for good-will and the spirit of service in overcoming prejudice towards foreigners, in order that unity of community life may be secured. "America's fundamental error is in thinking of her immigrants as liabilities rather than assets." A stirring presentation of the principles of democracy on which the League of Neighbors in Elizabeth is based. (Apply to the author.)

Licensing Transient Merchants and Peddlers.—A model ordinance. By Ambrose Fuller, member of the Minnesota Bar, with the St. Paul Bureau of Municipal Research. Publication No. 4 of the League of Minnesota Municipalities. June, 1924. 10 pp. Discussing some main phases of the problem, which is "as old as civic life itself." (Apply to the Municipal Reference Bureau, University of Minnesota Library, Minneapolis, Minn.)

New Haven Council of Social Agencies.—Report of the Survey Committee to the Executive Committee, Part I: Child Welfare Work; Family Welfare Work; Work for Homeless and Transient Men. 1924. 24 pp. The survey was undertaken in response to a request from the Community Chest for fuller knowledge of conditions and measures that would tend towards economy, efficiency and greater helpfulness. Each recommendation of the Survey Committee is coupled with the analysis of the particular problem to which it applies. The report is thus essentially frank and practical. (Apply to Otto Davis, Executive Secretary, The New Haven Council of Social Agencies, 82 Church Street, New Haven, Conn.)

NORTON FLOORS
Alundum Tile and Treads

For the Entrance

There are two good, sound reasons why Norton Floors are recommended for the entrance to schools and other municipal buildings. They have a slip-proof surface and they are durable. Both are the result of the use of Alundum abrasive.

The various types and colors of Norton Floors make it possible to bring them into any decorative scheme and to use them in association with the finest of building materials.

In the entrance above Alundum Aggregates are combined with marble chips producing a beautiful terrazzo with the added qualities of durability and safety resulting from a non-slip surface. Other types of Norton Floors are Alundum Floor and Stair Tile, Alundum Ceramic Mosaic Tile, and Alundum Aggregate Tile and Treads.

NORTON COMPANY Worcester, Mass.

New York Chicago Detroit Philadelphia

Hamilton, Ontario

T-112

Selecting Employees for Public Service.—Methods of Selecting Employees to Fill High Grade Positions in the Public Service. The March-April, 1924, issue of Public Personnel Studies, published by the Bureau of Public Personnel Administration, Institute for Government Research, 26 Jackson Place, Washington, D. C. 59 pp. Explaining the theoretical and practical considerations involved in making the selection through competitive tests conducted by the central employment agency, showing the extent to which such agencies have conducted tests to fill vacancies in high-grade public service positions, and the kind of tests used, and stating opinions as to the success attained. (Apply to W. F. Willoughby, Director of the Bureau.)

Thames Valley Regional Plan.—Preliminary Report of the Joint Town Planning Committee upon the Regional Survey. By Thomas Adams and Longstreth Thompson, town planning consultants, 121, Victoria Street, London, S. W. 1, England. September, 1923. 53 quarto pp. Maps, diagrams, tables. The land in the Thames region is mainly used for residence and recreation, manufacturing being of secondary importance and considered in this survey principally from the view-point of preventing industries from injuring other uses of the land. The scope of the survey and plan includes; main transport routes; zoning proposals; density provisions and proposals as to building lines and heights; open spaces; sites for civic centers; places for shopping centers. The plan aims, not to eliminate local town planning schemes, but to bring about voluntary local collaboration in an acceptable general plan. (Apply to the consultants.)

Sanitary Engineering in Virginia.—Report of Division of Sanitary Engineering, reprinted from the Biennial Report of the State Board of Health for 1921-1923, in the April, 1924, issue of the Virginia Health Bulletin, published by the State Board of Health. 37 pp. Diagrams, tables. This report covers the progress made in water and sewerage improvements, with especial consideration of filtration and chlorination. The tables give details regarding chlorination plants throughout the state, the ownership of the water-works, and the purity of the supplies. Valuable information about the principal investigations in certain towns is given, also important details of the methods used in the sterilization of swimming pools. (Apply to Richard Messer, Chief Engineer, State Board of Health, Richmond, Va.)

A Fuel Program for the City of Buffalo, N. Y.—By G. S. Brewer, Assistant Fuel Engineer, U. S. Bureau of Mines, and Benjamin Joy Hatmaker, Consulting Geologist, Department of Public Works, Buffalo, N. Y. Published by cooperative agreement between the Bureau of Mines, Department of the Interior, and the city of Buffalo. 88 pp. Map, charts, tables. This report has been formulated with the idea of attaining the ultimate elimination of smoke, and of guarding the people of Buffalo against the current annoyances due to a chaotic fuel situation, especially a shortage of gas supply at times when it is most needed. (Apply to Department of Public Works, Buffalo, N. Y.)

Books for Social Workers.—A selected list compiled and annotated by the St. Louis Library School, Class of 1924, at the request of the Community Council of St. Louis. 43 pp. in the Library School Number (June, 1924) of the St. Louis Public Library Monthly Bulletin. (Apply to Arthur E. Bostwick, Librarian, St. Louis, Mo.)

Regulation of Plumbing.—Recommended Minimum Requirements for Plumbing in Dwellings and Similar Buildings. Final report of Subcommittee on Plumbing of the Department of Commerce Building Code Committee, submitted July 3, 1923. In the Elimination of Waste Series published by the United States Department of Commerce. Published 1924. XV + 260 pp. Drawings, charts, tables. The subject is considered from the point of view of the sanitarian, manufacturer, plumber, and inspector, but first of all in relation to the health and comfort of the house dweller. The Subcommittee, appointed by Secretary Hoover in 1921, was as follows: George C. Whipple, Chairman, Professor of Sanitary Engineering, Harvard University; Harry Y. Carson, research engineer, American Cast Iron Company, Birmingham, Ala.; William C. Groeniger, consulting engineer, Columbus, Ohio; Thomas F. Hanley, of Hanley & Company, mechanical engineers and contractors, Chicago; A. E. Hansen, hydraulic and sanitary engineer, New York City; James A. Messer, President, James A. Messer Company, Washington, D. C.; William J. Spencer, Secretary-Treasurer, Building Trades Department, American Federation of Labor; Albert L. Webster, consulting engineer, New York City. 35 cents. (Apply to the Government Printing Office, Washington, D. C.)

Tractive Resistance and Related Characteristics of Roadway Surfaces.—By T. R. Agg. An investigation conducted by the Iowa Engineering Experiment Station in cooperation with the U. S. Bureau of Public Roads and the Iowa Highway Commission. Bulletin 67 of the Engineering Experiment Station. February 6, 1924. 62 pp. Views, charts, tables. (Apply to Iowa Engineering Experiment Station, Ames, Iowa.)

The President's Conference on Outdoor Recreation.—The Conference was held in Washington, D. C., May 22-24, 1924. Addresses, resolutions, etc., reported in the July number of The Playground. 80 pp. 40 cents. (Apply to The Playground and Recreation Association of America, 315 Fourth Avenue, New York, N. Y.)

Municipal Drug Control.—By Charles V. Craster, M. D., Newark, N. J. 4 pp. in the May, 1924, issue of the Monthly Bulletin of the Department of Health, Newark, N. J. An address read before the Central Atlantic States Association of American Dairy Food and Drug Officials at New York, April 28, 1924, setting forth the need of control of the purity and strength of drugs, and the standards of their manufacture, showing what the legal requirements are, and giving incidents illustrative of the benefit of drug supervision. (Apply to the Department of Health, Newark, N. J.)

Relieving Congestion on Atlanta's Streets.—Reprinted from Electric Railway Journal of March 15, 1924. 3 quarto pp. A review of the preliminary report made to the City Council of Atlanta by John A. Beeler, consulting engineer, of New York City. This report recommends making changes in Atlanta's downtown district, relocation and wider spacing of car stops, double berthing, additional raised safety loading platforms, more street collectors, parking restrictions, and coordinating the movement of other traffic with those of the street cars. (Apply to The Beeler Organization, 52 Vanderbilt Avenue, New York, N. Y.)

What Planning Has Done for Cities.—By George B. Ford, President, National Conference on City Planning. 1924. 21 pp. An analysis of the results of a questionnaire sent out by the Conference to about 200 cities known for their planning activity. The various kinds of planning are shown and typical projects are considered, with effective methods of getting the plans authorized and paid for, and statements of saving in money or convenience, safety and beauty. (Apply to Flavel Shurtleff, Secretary of the Conference, 130 East 22nd Street, New York, N. Y.)

City Planning in Somerville, Mass.—Annual Report of the Somerville Planning Board for the Year 1923, together with Preliminary Survey and Program for a City Plan, prepared by the Technical Advisory Corporation, consulting engineers, 15 Park Row, New York, N. Y. 128 pp. Illustrated. The report of the Planning Board summarizes its previous recommendations and outlines the present status of the city planning work in Somerville, with the Board's recommendations for the future. An interim zoning ordinance is given. Most of the sections of the consultants' report are followed by definite recommendations, effectively displayed, regarding town action on the points under discussion. The Program is in two sections: Matters Requiring Immediate Action; Matters Requiring Action in Near Future. (Apply to the consulting engineers.)

American Association for Promoting Hygiene and Public Baths.—Journal of the Association, Volume VI. April, 1924. 117 pp. Illustrated. Containing, besides notes and comment on various matters connected with the Association and its work, the report of the annual meeting of the Association in 1923, with many papers. Subscription, $1 per year. (Apply to Arthur Morton Crane, Manager of the Journal, Roselle Park, N. J.)

Centralized Purchasing.—Two pamphlets by Russell Forbes, Research Secretary, National Association of Purchasing Agents: "Centralized Purchasing—A Means of Tax Reduction," 20 pp., originally published in the Tulsa Tribune; "Centralized Purchasing in Governments of United States and Canada," reprinted from "Competency and Economy in Public Expenditures," in the May, 1924, issue of the Annals of American Academy of Political and Social Science, 15 pp. The first is made up of suggested charter provisions to establish central purchasing in Tulsa, Okla., and a number of articles in easy style presenting the principles and advantages of this method. Both pamphlets are illustrated with charts. (Apply to W. L. Chandler, Secretary of the Association, Woolworth Building, New York, N. Y.)

Equip for Safety and Durability

Organizers of playgrounds must safeguard the children with equipment of the highest quality. MEDART Playground Equipment has been endorsed by authorities as being the utmost in safety and durability. Swings with steel link supports tested for 2500 pounds tensile strength typify the care given to safety in all MEDART apparatus.

MEDART
PLAYGROUND EQUIPMENT

Based on durability and continued satisfaction MEDART Equipment is surprisingly economical. Send for Catalog "M-6" for complete information on playground equipment and attractive prices.

Fred Medart Manufacturing Co.
Potomac and DeKalb Sts., St. Louis, Mo.

Also manufacturers of Steel Lockers
Catalog A-3 on Request

New York State Commission of Housing and Regional Planning.—Regional Planning; The Work of the Commission. News Bulletin No. 1 issued by the State of New York Bureau of Housing and Regional Planning, 949 Broadway, New York, N. Y. June, 1924. 6 mimeographed pp. The article on Regional Planning is by Clarence S. Stein, Chairman of the Commission. The outline of the work of the Commission covers the period since its creation in May, 1923. (Apply to George Gove, Director of Investigations.)

Service Relations of Town and Country.—The Service Organization of Town and Country.—A Brief of Findings and Principles. Published, December, 1923, as Research Bulletin No. 58 of the Agricultural Experiment Station of the University of Wisconsin and the United States Department of Agriculture Cooperating. By J. H. Kolb, of the Department of Agricultural Economics of the University. 78 pp. Charts, tables. All of Dane County was considered for certain parts of the study. Four towns in the eastern part were then studied intensively and then farm families living in their service areas were visited. Elkhorn, in Walworth County, and Waupaca, in Waupaca County, were studied to serve as checks on tendencies discovered in the first county. The facts presented and the conclusions drawn from them are worth the study of chamber of commerce secretaries who are interested in the relations between business men and farmers. Free to residents of Wisconsin; others send 25 cents. (Apply to the Agricultural Experiment Station, Madison, Wis.)

Ten Years of the Merit System.—How It Has Operated in the State, Counties and Cities of Ohio. 5 quarto pp. in the May, 1924, issue of "Greater Cleveland," published by The Citizens League of Cleveland, 1307 Swetland Building. Replying to the question: "Why is the law not enforced?" (Apply to the League.)

Health for the Family.—Three 4-page leaflets published by the New York Tuberculosis Association, 10 East 39th Street, New York, N. Y.: "Health for Young Men and Women"; "Good Health in the Middle Years"; "Comfort and Safety for the Older Folk." Each with attractive cover drawing. Containing practical advice on the preservation of health. (Apply to the Association.)

School Publicity.—Special School Publicity Number of the Educational Research Bulletin of the College of Education, of Ohio State University, Columbus, Ohio. April 16, 1924. 24 pp. Containing the following material: "Continuous School Publicity," by G. W. Grill, Clerk, Board of Education, Lakewood, Ohio; "The Schools and the Newspapers," by Clyde R. Miller, Director of Publications, Cleveland Public Schools; "Selected Bibliography on School Publicity," by L. Belle Voegelein, Bureau of Educational Research; "Securing Support on the Basis of Value," by the Editor, B. R. Buckingham; and "A Cooperative Study of School Publicity," by P. R. Stevenson, of the Bureau, who compiled this number of the Bulletin. (Apply to the Bureau of Educational Research, Ohio State University, Columbus, Ohio.)

Plumbing Code, Chicago.—Edition of 1924. Pocket size. 50 pp. 25 cents. (Apply to Frederick Rex, Librarian, Municipal Reference Library, 1005 City Hall, Chicago, Ill.

The Bonded Debt of 201 Cities as at January 1, 1924.—By C. E. Rightor, Chief Accountant, Detroit Bureau of Governmental Research. Reprinted from National Municipal Review for June, 1924. 9 pp. Tables. A statement of the total amount of bonds outstanding as a liability against the property in each city, classified by purpose; the sinking fund, similarly classified; the net total bonded debt; and the per capita net bonded debt. Within the five population groups recognized by the Census Bureau, the cities reporting are then ranked according to the per capita net debt. (Apply to the National Municipal League, 261 Broadway, New York, N. Y.).

International Association of Street Sanitation Officials.—Report of Proceedings of Fourth Annual Conference, held in Chicago September 27-29, 1923. 28 quarto pp. Illustrated. (Apply to A. M. Anderson, Secretary of the Association, 10 South La Salle Street, Chicago, Ill.)

Weights and Measures.—Report of the Sixteenth Annual Conference on Weights and Measures of the United States, held at the Bureau of Standards, Washington, D. C., May 21-24, 1924. An abridged account, retaining as much as possible of the permanently useful material. Miscellaneous Publications No. 55 of the Bureau of Standards. Price, 30 cents. 153 pp. Illustrated. The purpose of the Conference is to bring about in the states and municipalities the uniformity of practice as to weights and measures that is shown to be needed. George K. Burgess, Director of the Bureau of Standards, is the President of the Conference. (Apply to the Government Printing Office.)

Some Problems in the Operation of Imhoff Tanks.—By Earle L. Waterman, Associate Professor of Sanitary Engineering, University of Iowa. Presented at the Fifth Conference on Sewage Treatment at Ames, Iowa, October 22-24, 1923. Bulletin 59 of the Engineering Extension Department, Iowa State College, Ames, Iowa. 12 pp. Illustrated. This is one of the more general papers presented at the Conference, and discusses briefly the principles on which the Imhoff tank is designed, with an outline of operating procedure and special emphasis on particular problems. (Apply to the Engineering Extension Department.)

Park Districts in Chicago.—A 2-page mimeographed description of the park administration in Chicago, which involves "an extraordinary list of separate authorities, unparalleled in this or any other country." Issued by the Bureau of Statistics and Municipal Reference Library, 1005 City Hall, Chicago, Ill. (Apply to Frederick Rex, Municipal Reference Librarian.)

American Foundations.—A selected bibliography on American Foundations for Social Welfare. Bulletin No. 65 of The Russell Sage Foundation Library. June, 1924. Revised edition. Giving not only the official publications relative to the various Foundations, but explanations of the purposes of the Foundations and the names and addresses of their principal officers. 35 pp. (Apply to Frederick Warren Jenkins, Librarian, The Russell Sage Foundation Library, 130 East 22nd Street, New York, N. Y.)

Statutory Limitations on Property Taxation in Minnesota.—By Bryce E. Lehman, Assistant, Bureau of Research in Government, University of Minnesota. Publication No. 5 of the League of Minnesota Municipalities. June, 1924. 12 pp. Tables. (Apply to the Municipal Reference Bureau, University of Minnesota Library, Minneapolis, Minn.)

Official Directory of the City of New York.—The 1924 edition. Prepared under the direction of Peter J. Brady, Supervisor of the City Record, and compiled by William Viertel, Editor of the City Record. 280 pp. Containing the names, addresses and telephone numbers of city, county and borough officials in New York City, and the names of the state and Federal officials, with additional important and useful information. There is a new section giving "Changes Since 1923 Directory Due to Acts of State Legislature and Ordinances of Board of Aldermen." Paper, 15 cents; leather, 30 cents. (Apply to Board of City Record, Room 812, Municipal Building.)

Palisades Interstate Park.—Twenty-fourth Annual Report of the Commissioners. January 31, 1924. Legislative Document (1924) No. 85. 20 pp. Illustrated. An interesting account of the recreational facilities of the park and the way in which they have been used and appreciated. (Apply to William A. Welch, Chief Engineer of the Board of Commissioners, 25 Broadway, New York, N. Y.)

Types of Streets in the City of Chicago.—By F. E. Sullivan. A report of a thorough and intelligent investigation of the possible type of pavements to be used in all areas of Chicago. 5 pp. in the Journal of the Proceedings of the City Council of Chicago for May 28, 1924. (Apply to Frederick Rex, Municipal Reference Librarian, 1005 City Hall, Chicago, Ill.)

American Child Health Association.—Transactions of the first annual meeting of this association, which was formerly the American Child Hygiene Association and the Child Health Organization of America. The meeting was held at Detroit, Mich., October 15-17, 1923. 508 pp. Valuable papers and discussion on many divisions of this field. Herbert Hoover said in his presidential address: "Our new field is the systematic determination of the shortcomings in child health protection, community by community, and the demonstration of remedy." (Apply to Philip Van Ingen, M. D., Secretary of the Association, 370 Seventh Avenue, New York, N. Y.)

The Importance of Citizens' Committees in Securing Public Support for a City Planning Program.—By John Nolen, town and city planner, Cambridge, Mass. 26 pp. Published by the National Conference on City Planning. 1924. With a bibliography on city planning publicity. Showing the services that citizens' committees can render, and giving concrete illustrations of such services in various cities. (Apply to Flavel Shurtleff, Secretary, National Conference on City Planning, 130 East 22nd Street, New York, N. Y.)

The Constitution of the United States.—By Raymond Garfield Gettell, Professor of Political Science in the University of California. VIII + 213 pp. A study of the fundamental ideals, principles and institutions of American government, intended primarily as a textbook in high schools, academies and normal schools. 80 cents. (Apply to Ginn and Company, Boston, Mass.)

CITY PLANNERS

in Convention in California

—discovered the amazing achievement of a rural development expressing the most advanced ideals of harmonious landscaping and architecture—combined with practical provisions for income.

—A subsidiary of the Santa Fe Railway directing qualified men in every department, has prepared RANCHO SANTA FE for delightful and productive homes.

—The choicest region of Southern California has been reserved for years for this accomplishment. Scenically unsurpassed—gorgeous blendings of mountains and sea—lovely valleys and slopes of fragrant citrus groves—the velvet verdure of avocados—

—And—crowning all, a picturesque Colonial-Spanish group of buildings designed to preserve the historic interest of this famous region and provide a social and commercial center under wise restrictions.

RANCHO SANTA FE

is distinctive

Send for "THE ENDLESS MIRACLE OF CALIFORNIA"—a story by John Steven McGroarty, author of the famous "Mission Play"—mailed upon request with our compliments. ***Address***

RANCHO SANTA FE, San Diego County, Calif.; or *write*

The Santa Fe Land Improvement Company,
408 Security Building, Los Angeles, California

From the International Union of Cities

Items translated from "Tablettes Documentaires Municipales" by Stephen Child, 538 Merchants Exchange Building, San Francisco, Calif., to whom requests for further information regarding this source of civic documentation should be addressed

City Planning an International Movement. 71 (063)

During the past month (July, 1924), there have been held at Amsterdam, Holland, two meetings of the greatest importance. The first of these was an International Congress of Cities organized by the International Union of Cities. The first session of this organization was held in Gand in 1913. This, its second regular meeting, held under the patronage of the city of Amsterdam, has for its objects (1) the permanent cooperation between municipalities of the world for the distribution of their civic documentation data, and (2) discussion as to how the municipalities of the many countries of the world may contribute to the work of the Society of Nations. Other reports were submitted upon the various phases of municipal life, notably in regard to public health and social uplift.

The International City Planning Conference, held also at Amsterdam at the same time, was organized by the International Garden Cities and Town Planning Federation. The principal subjects under discussion were: regional planning in relation to the life of our great cities; and parks, systems of parks and recreation in general.

The Transformation of Rome. 71.311 (45.632)

The Eternal City has recently undergone notable changes. The growth in population during and since the war has been enormous, resulting in intense traffic congestion and a serious shortage of housing accommodations, in spite of the laying out of several new quarters or districts. Complaint is made by some that, in the course of these recent "improvements," numerous interesting nooks and corners have been rendered ugly rather than beautiful.

The Belgian Government's Aid to Housing in 1924. 33.332:35.078.5 (493)

The Belgian Government some years ago authorized the formation of the "Société Nationale des Habitations à bon Marché," for the purpose of helping forward the work of building inexpensive homes. Each year this organization has received large sums of money from the Government—never, however, large enough to really solve the housing shortage of this thriving little nation. It is interesting to note that for the year 1924 the Belgian Government has included in its budget the following items affecting the work of this National Society:

1. Discharging one-quarter of the 66 annuities previously granted at 2.75 per cent
2. Authorizing the participation by the National Government, through the means of this National Society, in the formation of the capital of local building societies to the extent of 1,000,000 francs
3. Placing at the disposal of the National Society, for advances or loans at 2 per cent to the local building societies, a credit of 100 million francs
4. Authorizing premiums to be granted to individuals in straitened circumstances (principally those suffering from war losses) to the extent of 10,000,000 francs

A New Process of Making Brick in England. 66.67 (42)

A new process has lately been patented in England for the manufacture of brick. The earth is dried and pulverized and then ground up with a denifite quantity of water which is forced into the mixture in small drops, and just enough water to produce the required consistency. The mixture is then pressed into the molds and afterward baked. The process permits the employment of soil not heretofore utilized by former methods. The bricks thus formed are regular in shape and show a strong resistance to the absorption of water. The process, if it proves as efficacious as announced, will be extremely important to all brick-using countries.

Compressed Cork as a Means of Reducing the Cost of Building Houses. 69.1

Cork is well known as a cheap and light material. The industry of cork-making has its most important center of production in France in the district known as "Lot-et-Garonne" and in the "Var." But this industry utilizes only the cork bark of the female species of cork-oak. There has therefore in the past been an immense amount of unused cork-bark-oak. To-day the manufacture of compressed cork bark is accomplished from both the male and female varieties of this tree and has found application in many ways. Remembering the marvelous qualities of cork for repelling heat, the Swiss have been notably ingenious in making this material play the role of first importance in housing construction. As it is easy to prepare this material in panels, they have hit upon the idea of adapting these panels, which are really very fragile and easily broken, by framing them in metal, cement or wood frames and substituting these framed panels for the cork pith formed into briquettes (an expensive and slow process). There is economy in the use of this material, for, being light weight, foundations may be lighter; and there is economy also in time of construction. The outside of buildings thus erected are covered with a coat of cement plaster. The cork mixed in this way is molded like artificial stone. It is quite non-inflammable, and Swiss insurance companies do not discriminate in regard to its use as compared with other materials. This material, of which an abundance may be found in France, offers interesting industrial possibilities and a great saving in the building of inexpensive homes and therefore in solving the housing shortage.

The Government of Holland Controls the Water Supply of the Entire Country. 35.170 (492)

After a characteristically thorough investigation, Holland has decided that the effect on the health of the community of the proper supply and distribution of water is of such importance that this problem must be controlled by the nation and not by local interests.

River or Surface Water Transformed into Underground Water. 62.811 (43.58)

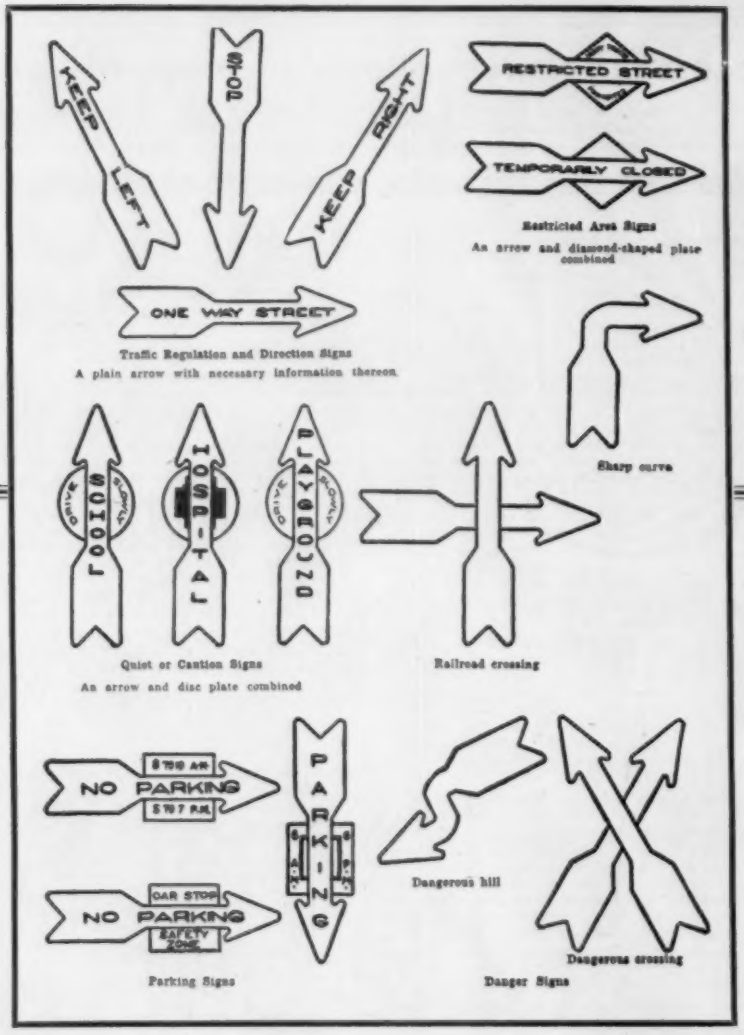
In the province of Hesse, Nassau, Germany, there has been proposed the possibility of producing, artificially, subterranean water from surface water. A method of this sort has been applied at Frankfort on the Main, where surface water pumped from the River Main is first purified in preliminary filters, then in a very fine filter. Following this the water is carried down underground to a depth of 2 metres, where, finely divided, it is filtered through 13 meters and intimately mixed with underground water. By this process the problem of furnishing water to the city of Frankfort has been assured for several generations. The water thus obtained is said to be quite on a par in quality with pure underground water and much better than surface water otherwise purified.

Special Separate Ways for Autos in Italy and England. 62.571.13

As a result of the constant increase in both weight and speed of automobiles, as well as their importance in traffic, the construction of ways especially for autos has become very desirable. For these reasons powerful associations in both Italy and England have now proposed this solution, which has received definite approval in Italy. The cost will be made good, thanks to the preparation of special laws, through charges or tolls laid upon the vehicles using these new ways.

The Problem of the Regulation of Traffic in Buenos Aires. 65.611:35.181.11 (82.12)

The traffic problem in this thriving South American city is acute, on account of the many narrow streets in the older portions of the city; the great increase in population and in commerce, and the use of these narrow streets by tramways. The concentration of the greater part of the wholesale business and of the public administration offices within a very limited area is a supplementary cause of traffic congestion. Different means of facilitating and ameliorating the circulation have been proposed, but have not produced very satisfactory results. What appears to be inevitable is the widening and extending of streets, the reduction of crossings, the diminution of congestion due to the tramways, and the decentralization, as far as possible, of business and administrative offices. It is realized that the building of subways would not help the congested condition, unless accompanied by a diminution of the number of vehicles in circulation. It is believed necessary to replace the tramways by motor busses in the center of the city where streets are narrow.



Standard Arrow Signs have been adopted by the International Association of Chiefs of Police as the logical solution of universal traffic regulation. These signs are being used by

NEW YORK, GARY, SAN FRANCISCO

and other progressive municipalities—Literature and samples on request—No obligation.

Manufactured by

UNION IRON PRODUCTS COMPANY

EAST CHICAGO **INDIANA**

The English Architect and City Planning. 71
The Royal Institute of British Architects has decided to create a special diploma in City Planning. The Council has proposed the following general principles: (1) Each city possesses a special individual character which should find its expression in the plan. (2) All natural beauties, such as hills, forests, remarkable trees, brooks and lakes should not only be respected but emphasized. It is necessary to make them assume a definite part in the plan as important and determining factors. (3) The principal lines of transit should have their direction defined and always with reference to the topography. (4) The art of planning, this art of combining with judgment and with taste numerous elements, is quite as essential to the success of planning for a district or a suburb as it is for a project for a great building. A plan which is only a geometric, technical, rule-of-thumb plan is not sufficient. (5) Long straight streets when adopted should have a definite purpose. (6) Points of view should in general be limited to that which the sight may readily comprehend. All panoramas or general views should as far as possible be given an appropriate frame. (7) The grouping and arrangement of principal buildings and of open spaces should be studied with a view to producing happy architectonic ensembles and no project of city planning may be regarded as satisfactory that does not include sufficient open spaces.

The Demolition of Paris Fortifications. 71.31 (44.361)
Of the 94 bastions forming the fortification belt of Paris, 79 are condemned, 39 are already torn down and 7 in course of being removed. The expense already incurred or provided for amounts to 28,760,067 francs. They have salvaged 4,650 cubic meters of cut stone; 37,300 cubic meters of "millstone" and 193,000 cubic meters of ashlar masonry. About 70 acres of the cleared ground is to be devoted to the erection of inexpensive homes, about 18 or 20 acres to the University of the City of Paris, and nearly 25 acres to multi-family dwellings or apartments to be rented at moderate rates. According to a statement of the different expenses already incurred in the work and in the preparation for better planning for this area, the total amount to be expended will be something over one hundred million francs.

The Heating of Houses. 66.297
The expert Dr. E. Griffiths has been experimenting with regard to the conductability of heat by various types of house walls. He claims that a wall nine inches thick built entirely of cement allows 72 per cent more warmth to pass through it than the same thickness of wall built of ordinary or "stock" brick, and that a wall of cinder cement permits 10 per cent more heat to pass than a brick wall of similar thickness. A large surface of glass renders a house less warm.

The Regulation of the Flow of the Seine. 6.74 (44.361)
The eminent French engineer, M. Henri Chabal, has been studying the problem of regulating the flow of water in the Seine basin. It is now proposed to store the run-off in 23 large reservoirs with a capacity of 2,325,000,000 cubic meters. In 1910 the water in the Seine at Pont Tournell reached an elevation of 8.48 meters. This new project will prevent the river ever rising higher than 4.9 meters at this point. The emptying of these great reservoirs will take place at reasonable times, permitting 16,000,000 cubic meters a day during the five months of the dry season. The work will be accomplished in two stages, the first of which will cost 680,000,000 francs, and the total cost will be 1,700,000,000 francs. Besides this, hydro-electric power will be developed at the various falls of the reservoirs and hydro-electric works will be combined with a number of the navigation dams. The water accumulated will be allowed to irrigate about 8,000 acres. Navigation service will be aided as well as the revenue of the Port of Paris and of other projected ports in the neighborhood.

On the Calendar of Conventions

SEPTEMBER 9-11.—READING, PA.
Pennsylvania State Association of County Commissioners. Annual convention. Secretary, L. C. Norris, Clearfield, Pa.

SEPTEMBER, 10-12.—MONTREAL, QUE.
Canadian Tax Conference. Canadian Civil Service Conference. Annual convention. Secretary, Horace L. Brittain, 189 Church Street, Toronto, Ont.

SEPTEMBER 15-19.—ST. LOUIS, MO.
National Tax Association. Annual conference. Secretary, Alfred E. Holcomb, 195 Broadway, New York, N. Y.

SEPTEMBER 23-25.—MONTREAL, QUE.
City Managers' Association. Annual convention. Executive Secretary, John G. Stutz, Lawrence, Kans.

SEPTEMBER 29-OCTOBER 2.—BOSTON, MASS.
American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 1134, Lakeland, Fla.

SEPTEMBER 29-OCTOBER 3.—LOUISVILLE, KY.
National Safety Council. National Safety Congress. Secretary, W. H. Cameron, 168 North Michigan Avenue, Chicago, Ill.

SEPTEMBER 30-OCTOBER 3.—ROCHESTER, N. Y.
New England Water Works Association. Annual convention. Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

OCTOBER 6.—WORCESTER, MASS.
Massachusetts Federation of Planning Boards. Annual conference. Secretary, Arthur C. Comey, Abbot Building, Harvard Square, Cambridge, Mass.

OCTOBER 6-9.—WASHINGTON, D. C.
American Red Cross. Annual convention. Secretary, Mabel T. Boardman, National Headquarters, Washington, D. C.

OCTOBER 6-9.—WASHINGTON, D. C.
American Institute of Park Executives. Annual convention. Secretary-Treasurer, Will O. Doolittle, Box 548, Minot, N. Dak.

OCTOBER 6-10.—MONTEREY, CALIF.
League of California Municipalities. Annual convention. Executive Secretary, William J. Locke, Room 707, Chancery Building, San Francisco, Calif.

OCTOBER 16-17.—COLUMBUS, OHIO.
Ohio State Conference on City Planning. Annual conference. Secretary-Treasurer, Charlotte Rumbold, 201 Chamber of Commerce Building, Cleveland, Ohio.

OCTOBER 8-10.—WASHINGTON, D. C.
American Civic Association. Annual convention. Secretary, Miss Harlean James, Union Trust Building, Washington, D. C.

OCTOBER 8-10.—EMPORIA, KANS.
League of Kansas Municipalities. Annual convention. Secretary-Treasurer, John G. Stutz, Lawrence, Kans.

OCTOBER 14-16.—KANSAS CITY, MO.
American Child Health Association. Annual meeting. Secretary, Dr. Philip Van Ingen, 370 Seventh Avenue, New York, N. Y.

OCTOBER 14-17.—AUGUSTA, GA.
International Association of Municipal Electricians. Annual convention. Secretary, W. R. Arbuckle, Bayonne, N. J.

OCTOBER 16-21.—ATLANTIC CITY, N. J.
Playground and Recreation Association of America. Annual recreation congress. Secretary, H. S. Braucher, 315 Fourth Avenue, New York, N. Y.

OCTOBER 20-22.—WASHINGTON, D. C.
National Association of Commercial Organization Secretaries. Annual meeting. Secretary, Raymond B. Gibbs, Chamber of Commerce, Kansas City, Kans.

OCTOBER 20-23.—DETROIT, MICH.
American Public Health Association. Annual meeting. Secretary, Homer N. Calver, 370 Seventh Avenue, New York, N. Y.

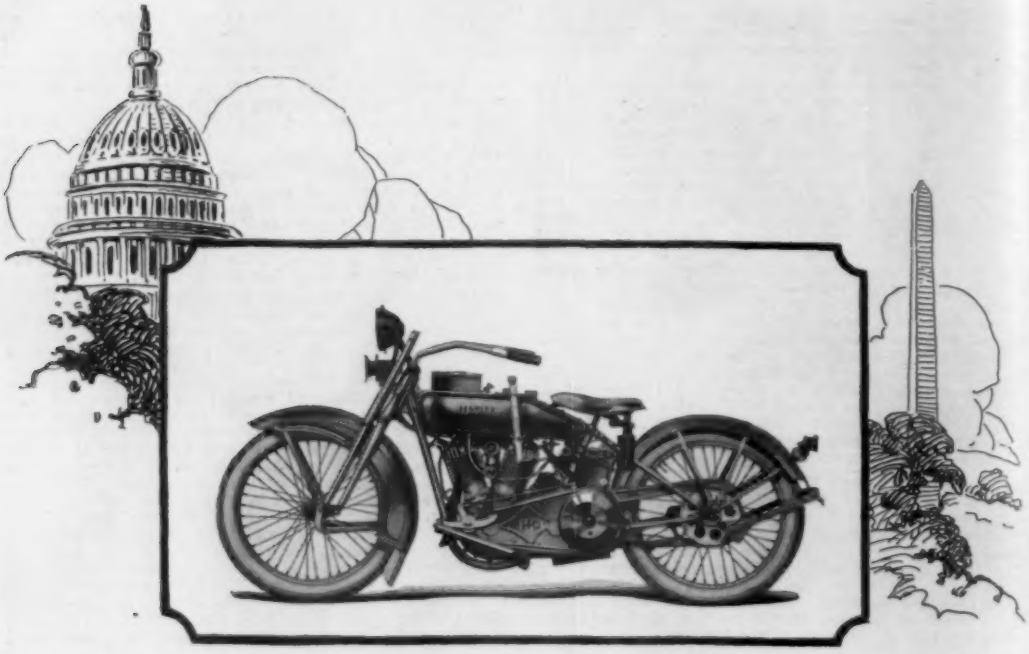
OCTOBER 27-31.—BRIARCLIFF MANOR, N. Y.
Illuminating Engineering Society. Annual convention. General Secretary, Samuel G. Hibben, 29 West 39th Street, New York, N. Y.

NOVEMBER 4-7.—HOUSTON, TEX.
Texas Association of Sanitarians. Annual Short School for Sanitarians, in cooperation with the Texas State Board of Health. Secretary, E. G. Eggert, Texas State Board of Health, Austin, Tex.

NOVEMBER 7-11.—COLUMBUS, OHIO.
American Country Life Association. Annual conference. Secretary, Henry Israel, Room 1849, Grand Central Terminal, New York, N. Y.

NOVEMBER 10-12.—CAMBRIDGE, MASS.
National Association of Civic Secretaries. Annual meeting. Secretary, Robert E. Tracy, 313 South Broad Street, Philadelphia, Pa.

NOVEMBER 10-12.—CAMBRIDGE, MASS.
National Municipal League. Annual meeting. Secretary, H. W. Dodds, 261 Broadway, New York, N. Y.



Uncle Sam's Motorcycle

ENDORSEMENT of the Harley-Davidson by many departments of the United States Government confirms the wisdom of 1682 cities, towns and states which use this famous motorcycle for police work.

U. S. Bureau of Immigration, Washington, D. C., just bought 29 Harley-Davidsons and 21 sidecars for border patrol duty.

U. S. Customs Service, St. Albans, Vt., just purchased 12 Harley-Davidsons for patrolling the international boundary.

U. S. Post Office Department recently bought 15 Harley-Davidsons and sidecars for service in Hawaii.

Many other Government departments have used Harley-Davidsons for years. And veterans will never forget the unfaltering service of this sturdy, dependable, economical motorcycle in the World War.

Let us show you how YOUR department can use one or more Harley-Davidsons profitably. Write for special Police Motorcycle literature. It's FREE.

HARLEY-DAVIDSON MOTOR CO., Dept. M, MILWAUKEE, WIS.

Harley-Davidson
The Motorcycle

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Model of Asphalt Lake Displayed at Wembley

Visitors to the British Empire Exhibition being held at Wembley, England, have expressed considerable interest in the exhibit of Trinidad, a British possession in the Caribbean Sea, where the Trinidad asphalt lake is located. This model of the asphalt lake is one of the important features of Trinidad's exhibits. The model is constructed of balata gum except for the lake, which is made of native asphalt taken from the Trinidad asphalt lake.

In the reproduction of the photograph of the model below, in the lower right-hand corner will be seen the village of La Brea, while above at the edge of the lake is the village of New Jersey, where the laborers and their families live. The asphalt refinery and barreling plant are to the left of the village. The office of the Asphalt Company, bungalows of the employees of the Company, hotel and clubhouses are located between the refinery and the loading pier. At the extreme left-hand corner of the photograph is the jetty and end of the aerial tramway, where vessels dock to be loaded with asphalt.

Since 1888 approximately 4,500,000 tons of asphalt have been removed from the lake in Trinidad. The asphalt lake is operated on a lease from the British government by a subsidiary of the Barber Asphalt Company, Land Title Building, Philadelphia, Pa. The royalties and duties paid the government since 1888 have amounted to $7,100,000.

The origin of this asphalt lake is attributed to petroleum springs far beneath the surface of the lake. Scientists say that the pitch worked its way upwards centuries ago and came in contact with a huge mass of volcanic matter, the chief component of which is clay in a colloidal form, and the asphalt resulted. The depth of the lake is a mystery. In 1916 borings were made to ascertain the depth, but the drill which was sent down was bent and rendered useless by the movement of the asphalt at a depth of 175 feet, so that the actual depth of the lake is unknown.

The asphalt is dug from the lake by West Indian negroes by the use of broad-faced picks. The asphalt breaks in large chunks, weighing from 40 to 50 pounds, and is carried by natives to small cars and distributed on a narrow-gage railroad to the refinery near by or to the pier,

MODEL OF THE ISLAND OF TRINIDAD SHOWN AT WEMBLEY BRITISH EMPIRE EXPOSITION

This is a Life Insurance Policy---

Does YOUR City Hold One?

THE LEHMAN TRAFFIC GUIDE

may be called a life insurance policy for the protection of the public. The City (policy holder) purchases the Guide to insure its citizens (beneficiary) of absolute safety, thereby eliminating worry and preserving life by preventing traffic accidents.

To City Officials—It is your duty to see that your City has the best protection that money can buy. Insure your City with the Lehman Traffic Guide, a marker conspicuous by night or day that cannot be damaged by the heaviest loaded truck. The Lehman Traffic Guide is lighted by night by two bulbs which shine through ten 3½-inch ruby lenses. It stands but 5 inches high. It can be built to fit any size manhole, thus doing double duty as a traffic guide and manhole cover.

Don't Wait! Insurance tomorrow will not be of any assistance today in preventing some terrible accident.

ELKHART FOUNDRY & MACHINE CO.

SOUTH ELKHART AVENUE ELKHART, INDIANA

THIS PHOTOGRAPH, TAKEN JUNE 25, 1924, SHOWS JIMBOCHO, ONE OF THE RECENTLY REBUILT STREETS IN THE BURNED AREA OF TOKIO

Notwithstanding the fact that buildings were shaken to pieces, the only damage done to this street, which is paved with Trinidad Lake asphalt, was a few slight burns that resulted from the intense heat of the flames which followed the earthquake

and shipped to the United States and other countries. The railroad running over the surface of the lake is laid on palm-tree ties and because of the constant motion of the asphalt the tracks frequently become twisted and must be inspected and straightened at regular intervals. When a quantity of asphalt is dug from the lake the cavity fills up within a short time. It often occurs that the natives in a day's work will make an excavation of approximately 500 cubic feet. However, on their return to work in the morning they find that the hole has disappeared and the space that was excavated has filled to approximately the level of the rest of the lake. All traces of the hole disappear in a few days. At first it might seem as if this phenomenon might be due to new asphalt coming into the hole from some underground source, but geologists state that the excavation is filled by the very slow settling or levelling of the entire surface of the lake. During the last 36 years, 4,500,000 tons of asphalt have been removed from the Trinidad Asphalt Lake and the level of the lake has dropped several feet.

Because of the composition of the asphalt, it runs together in a compact mass after being placed in the hold of the ship, and by the time the vessel has reached its destination it is once more solid matter. When the vessel is to be unloaded, laborers once again have to dig it out of the hold just as it was originally dug from the lake. Crude asphalt contains about 29 per cent water and must be refined before it can be used for commercial purposes. This is a simple process in which the asphalt is placed in large rectangular vats fitted with coils of steam pipe. Steam is allowed to pass through the pipes, causing the asphalt to melt and the water to evaporate.

Asphalt from this lake was first used for street paving, but a short time after it began to be used for the manufacture of asphalt shingles and roll roofing. Thousands of tons of asphalt are used annually in the construction of built-up roofs and asphalt mastic floors for large office buildings and industrial plants. A large amount is also used in the waterproofing of large engineering projects such as tunnels, bridge structures, dams and reservoirs.

Extension of Street-Lighting Service by Welsbach Company

The Welsbach Street Lighting Company, Philadelphia, Pa., which for over 25 years specialized in gas street lighting, has announced that it will extend its services to include electric street lighting. Through cooperation with the principal electric industries and central stations, it will undertake the development and maintenance of the existing as well as the construction of the most modern street-lighting systems. The aim of the organization, which is national in scope, is to give municipalities the most efficient and economical street-lighting service possible.

The Company has secured the services of Walter C. Allen, formerly Electrical Engineer of the District of Columbia, who had charge of the street-lighting system in the District for over 22 years, and under whose direction most of the lighting in that city has been installed. Mr. Allen will have immediate charge of the new branch of the Welsbach Company's operations and will bring to his new duties his extended experience in this special line of work, as well as the added experience in municipal and public utility activities gained during the last eight years as executive officer of the Public Utilities Commission of the District of Columbia. Mr. Allen is a graduate in civil engineering of the University of California and is a member of the Illuminating Engineering Society and an associate member of the American Institute of Electrical Engineers.

Pennsylvania Highways Guarded By — 150 *Indian Motocycles*

Squad of Pennsylvania Highway Patrol Mounted on Indians.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF HIGHWAYS
HARRISBURG

May 22, 1924.

Mr. J. B. McNaughton,
Indian Motocycle Co.,
Springfield, Mass.

My dear Mr. McNaughton:

I wish to take this opportunity to advise you that the Indian Motocycles purchased for our recently organized highway patrol are rendering excellent service to us in the actual patrolling of the roads of Pennsylvania.

They have been given every severe test on our highways throughout the winter months and have stood up beyond our every expectation. We have, at the present time, one hundred fifty Indian motorcycles in operation throughout this State and at this writing all are in perfect running condition with the exception of two which were damaged through the carelessness of the operators.

To my mind, the most important advantage is the wonderful co-operation and service rendered between the factory and dealer and our individual sub-stations. In addition to this the factory has supplied us with expert mechanics to teach our Patrolmen the fundamental principles in taking care of their machines together with the actual operation of same. We are very much pleased with this type of motorcycle and do not hesitate to recommend it to anyone in need of a good, durable, economical and efficient piece of equipment.

Very truly yours,

H. C. PRICE,
Captain, Highway Patrol.

PJD:HK.

Besides Pennsylvania and many other states there are over 1000 cities and towns that use Indian Motocycles in maintaining law and order. And in nearly every case the Indian Scout is the favorite. It is ideal for patrol work, escort duty and for catching speeders and criminals. 100 pounds lighter than ordinary motorcycles yet powerful and sturdy. Goes 60-75 miles per gallon. Has left-hand throttle control. Write for our free booklet "Maintaining Law and Order."

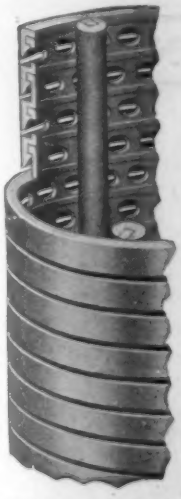
Indian Motocycle Co.

DEPT A-9 SPRINGFIELD, MASSACHUSETTS

INSTALLING A 15-INCH JOHNSON WELL SCREEN

Types of Wells

The dug well is the oldest form in use to-day. In fact, until very recent years the so-called "tube well" was unknown. As long as the dug well was the only thing known there was every reason for using it. A dug well is expensive, being many times as costly as a tube well, or wells, of the same capacity. This has frequently raised the proposition that a large-diameter well will yield a greater quantity than one of small diameter. This is true, but not in proportion to the increase in size and cost. It is easily seen that the cost of a dug well is out of all proportion to the value received. Not only is the expense of sinking an open well burdensome, but the excavation may cause the whole surrounding neighborhood to settle, owing to the removal of sand which cannot be replaced.



SECTION OF JOHNSON WELL SCREEN

To justify the recommendation of a dug well at the present time one must have a shallow water-bearing sand stratum and that lying within a few feet of the surface. Even problems of this kind are generally better solved by a battery of six-inch tube wells. The reason is logical and very obvious—a greatly increased drainage area is obtained. Fine sand is sometimes given as a reason for spending large sums of money on an open or dug well. For a fraction of the cost the tube well can be gravel-packed to give the same effect.

The tube well is by far the least expensive of all wells, because of its adaptability to all conditions. The material can be purchased in all markets, the local driller can install it, and it can be made in all sizes from 2 inches up. A screen with an inlet slot suitable to the sand may be installed after the well is sunk and the size of sand determined. The Johnson well screen, made by Edward E. Johnson, Inc., St. Paul, Minn., has, rather than many short and interrupted slots, one slot continuous from end to end of the tube. This intake slot runs spirally around the screen and is pitched 5½ to the inch. The manufacturers claim that this intake slot is 30 to 50 per cent longer than the sum total of the slots in other brass screens. This increased intake slot length per foot of screen naturally gives an increase in the amount of water admitted to the well, makes pumping easier and gives longer life to the well.

The sand protection of this screen is particularly good. One of the duties of a well screen is to keep the sand out of the well. This does not, however, mean all of the sand, because it is well at first to pump out all of the finest sand. A screen with a slot to hold back all of the sand about the well end from the time the well is first pumped would, in the majority of cases, make the well practically useless. The slot would be so narrow as to greatly impede the flow of water into the well. The screen must be made to admit a large percentage of the sand immediately surrounding the well end. The intake slot of the Johnson well screen is designed to allow this development with ease. Not only is the slot larger on the inside than on the outside, but no parts of the slot are parallel, a feature in the brass well screen field which is claimed to be absolutely unique in the Johnson well screen. All sand passing the lips of the slot can go without hindrance into the well and thence be pumped out, preventing rapid clogging of the well.

PAVING BRICK AND POCKETBOOKS

HE town, county or state that consistently paves with vitrified brick lightens the strain on every citizen's pocketbook for years to come.

A properly-designed, well-built vitrified brick pavement can be counted on for a quarter-century or more of service at a minimum of repair and upkeep cost. Many communities are enjoying brick pavements laid thirty and thirty-five years ago and look forward to getting fifty years of service before they need replacement!

Profit by the experience, for instance, of Bucyrus, O., where Walnut Street, a main traffic route, is still paved with the brick originally laid in 1891, 33 years ago, and relaid in 1922, *other side up*, for another generation of service. Or of Clinton, Iowa, which has yet to need a major repair for brick-paved Seventh Ave., between 2nd and 5th Sts., laid 32 years ago.

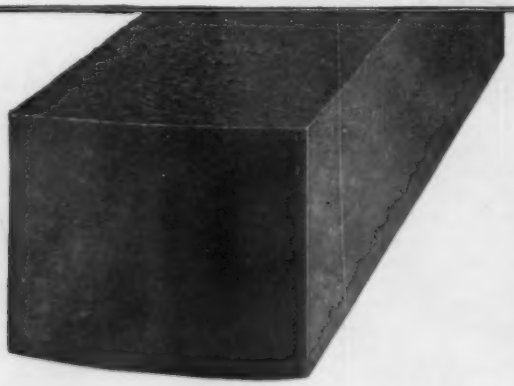
Do you know of any other pavement at a comparable cost which can hope to equal these records? Is there a pavement, *other than brick*, in *your* locality which can show any such record?

VITRIFIED Brick PAVEMENTS

National Paving Brick Manufacturers Association
Engineers Bldg. Cleveland, O.

Be led by experience — advocate vitrified brick pavements and keep taxes down. Get the pavement that *outlasts the bonds.*

OUTLAST THE BONDS



When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

A Factory-made Rail Filler

Municipal officials and street railway engineers have experienced a great deal of trouble from the vibration of street railway tracks, causing pulverization, resulting in voids which permit water to percolate and injure the structure. Cement, plaster, clay, tile and other similar brittle materials have been used as rail fillers without much success.

The Philip Carey Company, 54 Wayne Ave., Lockland, Cincinnati, Ohio, has developed the Carey Elastite rail filler, which is made to conform to the particular section of rail used. It

PLACING ELASTITE RAIL FILLER

is designed to give a complete vertical separation for the rail from top to bottom, so that it has no connection with the adjacent pavement, thus eliminating much of the pavement maintenance which has been so costly along street-car rails.

The rail filler is an asphaltic compound furnished in strips from 3 to 5 feet long, which are fitted against the web of the rail by placing and light driving. The filler extends slightly beyond the head of the rail, serving as an expansion joint for the pavement. The joint is factory made, uniform in dimensions and area, and is delivered ready for use. The labor cost for installation is a minimum and there is practically no loss or waste of material. This rail filler, which is unaffected by moisture or temperature changes, is readily shaped on the job to fit any track curve.

Large Purchase of Playground Apparatus

The Board of Education of the city of St. Louis, Mo., has recently placed a very large order for playground apparatus. The order amounts to $25,000 and includes apparatus for equipping thirty-three of the St. Louis school yards, so that each child may enjoy his recess in his own particular way and receive physical benefit from his play.

R. M. Milligan, Commissioner of Schools, made a rigid examination of the equipment submitted by various manufacturers and then placed the order with the Everwear Manufacturing Company, Springfield, Ohio.

New Transmission for Ford Trucks

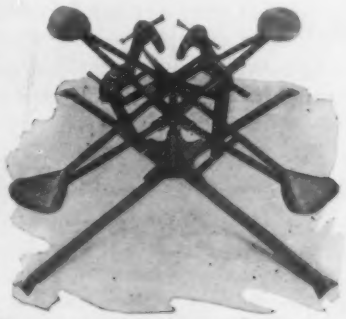
An auxiliary transmission for Ford 1-ton trucks has been developed by the Warford Corporation, 44 Whitehall Street, New York City. This transmission is a selective type gear shaft, which is installed directly behind the Ford transmission and makes no change in the original design or engineering features of the truck.

Chrome nickel gears are used in this transmission, mounted on vanadium steel shafts which revolve in tapered roller bearings adjustable for wear. The assembly is housed in a heavy cast aluminum case to protect it from dust. This transmission gives the Ford six speeds forward and three reverse, with gear ratios ranging from 36.54 to 1 in the first speed, to 5.31 in the sixth speed. This invention makes the Ford 1-ton truck more adaptable to municipal hauling, as it decreases maintenance costs, increases speed and increases the pulling power.

A New Amusement Device

The "Merry-Go-Bob" is a new recreational and amusement device which is a combination of the merry-go-round, teeter and rowing machine, all built into a single unit for children. This device is being sold by the W. H. Day Company, 131 Sixth Street, Milwaukee, Wis. The organizer of this company is W. H. Day, who was formerly advertising manager of the Gas Engine Works of the Worthington Pump & Machinery Corporation, Cudahy, Wis.

The 4-passenger size of the "Merry-Go-Bob" is shown in the accompanying illustration. This machine is also made for the use of two children. The device has shown itself to be popular in home play rooms and nurseries, on the porch or lawn, in schools, on playgrounds, in parks, camps, resorts, neighborhood centers, clubs, hotels and institutions. It provides healthful



A COMBINATION MERRY-GO-ROUND, TEETER AND ROWING MACHINE FOR PLAYGROUNDS

amusement and exercise for youngsters and is absolutely safe. It has no gears, chains or belts. Seated comfortably on the machine, the children, by alternately pushing with the feet and pulling with the hands, propel themselves in an inclined circular plane around an inclined axis, so that with each revolution each child rises and falls six inches.

Additions to Gamewell Staff

The Gamewell Company, Newton Upper Falls, Mass., has anounced that R. G. McLaughlin and J. S. McGehee have been added to its sales staff. Mr. McLaughlin has been assigned to assist A. L. Tinker, District Sales Manager of the Middle Atlantic States. Mr. McGehee is assisting Charles Berst, District Sales Manager of the Southern States, with headquarters at Atlanta.

Will You Let Winter Wreck Your Roads?

WHAT about your roads next winter? This is a question calling for an immediate answer. If you intend putting your roads in the condition they should be in when winter comes, you will have to act promptly.

Every road engineer knows that roads suffer greatly in the winter, if they are not in condition to meet the severe tests which winter imposes. A weak point or hole which would have been a minor repair in the fall, will grow greatly during the winter. A dollar spent in maintenance now may forestall the necessity of spending two dollars on the same job in the spring—and the road will be in better condition throughout the winter.

At this season we particularly call attention to the advantages Standard Asphalt Road Oils have to offer and to the excellent roads which are being built by the penetration method.

Ask for this free booklet.

At a comparatively small per mile cost you can put your roads in excellent condition to go through the winter. On the other hand, if you neglect your roads now, they may be damaged to the extent of thousands of dollars before spring.

This is a subject to which the engineers in our asphalt department have devoted much study. They will gladly co-operate with you and their recommendations will be based on years of practical experience, as a result you will be certain of deriving the greatest amount of benefit possible from the money expended.

Their services, which are free, are always available to you. Wire or phone us today.

STANDARD OIL COMPANY
(INDIANA)

910 S. Michigan Avenue **CHICAGO, ILLINOIS**

ILLINOIS
Chicago
Decatur
Joliet
Peoria
Quincy

INDIANA
Evansville
Indianapolis
South Bend
KANSAS
Wichita

IOWA
Davenport
Des Moines
Mason City
Sioux City

S. DAKOTA
Huron
MICHIGAN
Detroit
Grand Rapids
Saginaw

N. DAKOTA
Fargo
Minot
WISCONSIN
La Crosse
Milwaukee

MINNESOTA
Duluth
Mankato
Minneapolis

MISSOURI
Kansas City
St. Joseph
St. Louis

THE CLEVELAND AUDITORIUM EQUIPPED WITH SLIP-PROOF RAMPS AND FLOORS

Safety Treads in an Auditorium

It is claimed that the great auditorium of Cleveland, Ohio, where the Republican National Convention was held in June, can be emptied in five minutes or less. This is due chiefly to four main ramps, running from the first to the third floor, and a ramp from the basement to the first or main floor. The selection of a floor material for these ramps was an architectural problem which was solved for this great municipal building by the use of 55,000 pieces of Norton Alundum tile, made by the Norton Company, Worcester, Mass. In this case, slip-proof effectiveness in a walking surface insured a maximum degree of safety to the public and was considered of first importance.

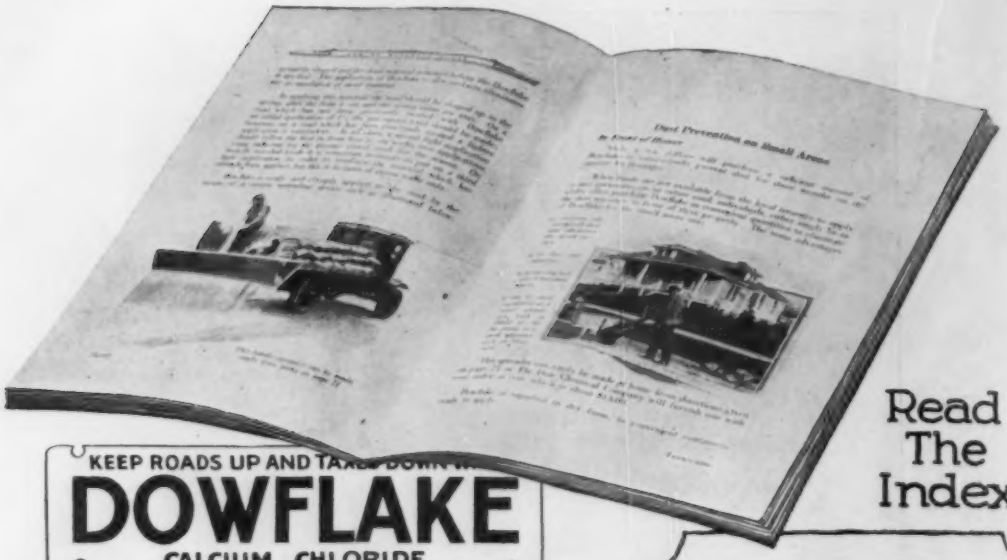
This type of Norton floor, a semi-vitreous tile, is made by mixing the electric furnace abrasive known by the trademark "Alundum" with a clay bonding material and vitrifying in a kiln by the same process used in the manufacture of Norton grinding wheels. This material has many definite needs in places such as the Cleveland auditorium, for stairway and railway station stairs and platforms, ramps and stairways in industrial buildings, and similar places where foot traffic is heavy and where there is a slipping hazard. In emphasizing the non-slip walking surface, the feature of durability should not be overlooked. To all who are acquainted with modern machining methods in the metal industries there is no need of emphasizing the toughness or the non-wearing properties of Alundum abrasive. It is doubtful if there are any materials that have had as severe tests in wear. In the metal industry throughout the world, this remarkable electric furnace product has been largely instrumental in revolutionizing machining methods. It is evident, therefore, that the wear from foot traffic will have very little, if any, effect on this vitrified tile.

Westinghouse Purchases Massey Concrete's Pole Business

The Massey Concrete Products Corporation, Peoples Gas Building, Chicago, Ill., has sold to the Westinghouse Electric & Manufacturing Co. its entire interest in the manufacture and sale of Hollowspun reinforced concrete street-lighting standards and concrete poles for street railway service, including its plant at Milwaukee, Wis. Since the Hollowspun department was confined exclusively to the Milwaukee plant of the Massey Corporation, its sale in no way affects the activities of the Massey Company in its other twelve plants where reinforced concrete pipe, piles, cribbing, signal material and other similar products for railroads and industries are manufactured.

For a number of years, the Westinghouse Electric & Manufacturing Co., through connections and relations with the George Cutter Company, has been engaged in the manufacture of cast iron poles for industrial, ornamental and street-lighting purposes at the George Cutter Works, South Bend, Indiana. The addition of the Hollowspun line to the line formerly manufactured increases the variety of poles which may be offered by this company to cities for street-lighting purposes. Hollowspun lighting standards which are made by the centrifugal process demonstrate the possibilities of efficiently moulding concrete. The great force with which the concrete is tamped in the mould and around the reinforcement by the centrifugal process insures a uniform strength and surface texture throughout the length of the product.

The transfer of the Massey plant became effective July 1, and the Westinghouse Company will handle the Hollowspun business through the George Cutter Works.



KEEP ROADS UP AND TAXES DOWN

DOWFLAKE

CALCIUM CHLORIDE

Read The Index

A Book for Road Men "How to Maintain Roads"

New and enlarged edition.

This pocket-size volume is chock full of valuable data and information no road man can afford to miss. It tells the latest methods being used by your fellow road builders, with complete information on what they do and how they do it, with quantities of materials to use, and tables, charts and diagrams which show the results of road building and maintenance experience over a period of years and under widely varying conditions. It is really a tribute to the thought, energy and skill of road men throughout the country for it is their work which has made this book possible. It treats of every day problems a road man encounters and is really a summary of accepted methods practiced by the foremost engineers and maintenance men. It's your own book—send for it today and see what your fellow-workers are doing.

This Is Only a Part of the Contents of This Book—It Will Give You an Idea of Its Wide Scope

Application Quantity Table 26
Breaker for Concrete Pavements 69
Cable Guard Rail 51
Care of Play Grounds 31
Cemetery Association, Ohio—Minutes of Meeting 33
Cemetery Drives 33
Condition of Surface When Applying Dowflake 19
Cost of Dust Prevention 21
Destructive Effect of Grinding Action of Wheels 11
Directional Road Signs 51
Distance That Can Be Dust Proofed in a Day 21
Ditches and Culverts 40
Dowflake—What It Is and What It Does 15
Dowflake to Supply and Retain Moisture 17
Drags, Road 54
Drainage 47
Drives on Private Grounds 30
Dust as a Cause of Accident 45
Dust as a Destroyer of Foods 45
Dust as a Disease Carrier 45
Dust Control 15
Dust Control a Maintenance Factor 16
Dust Prevention in Front of Homes 29
Dust Prevention on Small Areas 29
Effect of Moisture in Maintenance 10
Effect of Motor Traffic 43
Equipment for Applying Dust Control Material 30
Grading Machinery 55
Guard Rails 50
Handy Dust Prevention Containers 17
Highway Department Organization 61
Home Made Machinery 67
How Dowflake Supplies Moisture 18
How Much Dowflake to Apply 22
How Road Surfaces are Destroyed 42
How to Prevent Waste of Surface Material 42
How to Secure Blue Prints of Home Made Machinery 21
How to Use Labor 63
Maintenance Machinery 54
Moisture Binding to Prevent Wear 11
Moisture Controls Dust 16
Moist Surfaces Can be Dragged Any Time 18
Moist Surfaces Smooth and Firm 18
Organization Chart 60
Organization of Highway Work 61
Patching Concrete Pavements 69
Patching Gravel Roads 59
Pavement Breaker 69
Plans for Spreading Machine 71
Protective Signs and Markings 51
Public Parks 30
Quantity of Dust Control Material to Use 23
Road Construction Fundamentals 8
Road Machinery (Home Made) 67
Road Maintenance by Dust Prevention 16
Road Maintenance—Reasons for 8
Scarifying 59
Shoulders 54
Sign Maintenance 53
Signs and Road Markings 51
Specifications for Dust Prevention Material 30
Spreaders for Dowflake 70
Surface Protection Against Throwing of Wheels 11
Surface Scarifier 57
Tennis Court—Construction and Upkeep 59
Traffic Count Affects Road Wear 43

The Dow Chemical Company

Midland, Michigan

BRANCH SALES OFFICES

90 West Street
New York City

Second & Madison Sts.
Saint Louis

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

A CRANE EXCAVATOR WITH SKIMMER SCOOP REMOVING SNOW AFTER A FOUR-DAY STORM LAST WINTER IN BAY CITY, MICH.

Clearing Up City Streets After Heavy Snow Storms

Last winter a four-day snow fall in Bay City, Mich., was accompanied by high winds, causing bad drifts in the down-town district, so that it was impossible to park or operate automobiles. The Street Department, with trucks and hand shovels, was not able to keep ahead of the snow storm. The Bay City Dredge Works came to the rescue by loaning a Model 16-B crane-excavator with skimmer scoop to the Street Department. Although this excavator was equipped with only a ⅝-cubic yard capacity bucket, it was able to load trucks at the rate of 8 cubic yards in five minutes. Five-yard trucks were piled up with about 8 cubic yards of snow, and the excavator was kept busy until midnight, operating 15 hours per day, and in two days the cleaning up of more than 11 city blocks was completed.

The ⅝-cubic yard capacity skimmer scoop is intended normally for work in very hard material, such as hard clay, stone road or old pavement work. A 2-cubic yard capacity snow bucket could have been handled with ease on this excavator, enabling the machine to load a truck in two trips or in less than one minute's time.

Cities and counties handling their own paving and road work and using a machine of this sort for grading, find it advantageous to use it in snow removal during the winter months. The skimmer scoop with its long horizontal crowd, cleans the snow from the pavement without any injury to it. The machine operating in Bay City and described above handled as much material as it would have been possible to remove with 20 men.

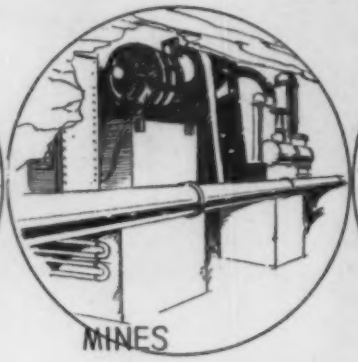
New Field Engineers for Asphalt Association

The Asphalt Association, 25 West 43rd Street, New York City, has announced several changes in its field personnel and the consolidation of the Newark, N. J., branch office with the main office in New York City. Vibert L. Ostrander, formerly First Deputy Commissioner, New York State Highway Department, has become manager of the Eastern District of the Association, with headquarters at 25 North Pearl Street, Albany, N. Y., succeeding Germain P. Graham, who has resigned to enter private practice. Frederick A. Reimer has resigned as manager of the New Jersey District to enter private business, and W. C. Ricketts has succeeded Harry P. Grier as a field representative in the Southern District, with headquarters at Charlotte, N. C. W. A. Crossland has accepted a position with the Southern branch. Frederick C. Field, until recently with the City Engineering Department at Calgary, Canada, has been appointed field representative in Canada, and will travel from the main office in New York City.

Columbian Iron Works Acquires New Plant Site

The Columbian Iron Works, Chattanooga, Tenn., has announced that it has purchased the property owned by the Continental Machinery Company in Chattanooga. Several weeks ago the capitalization of the Columbian Iron Works was increased and at that time it was explained that the increase was to take care of future expansions that would be made necessary by the increase in business of the iron works. The entire Columbian plant is to be moved from from its present location to the property purchased, which is located at Missionary Avenue and the Central of Georgia Railway. There will be no immediate developments and it is indicated that about three or four years will be required before the Columbian plant is entirely moved, as one department at a time will take up its location in the new building as prepared.

A large plant has been made necessary by the rapidly growing business of the Columbian company. The company now manufactures about 70 per cent of all the standard Underwriters Laboratory approved sprinklers and fire-hydrants and valves. The plant is the only one of its kind in the South and it is known over the entire country.



The World over they all joint their mains with

HUNDREDS of Water Works, Railroads, Mines, Contractors, and Industrial Plants have installed thousands of miles of cast iron bell and spigot water mains with LEADITE Joints.

They have used LEADITE on all sizes of pipe from 4-in. to 60-in., and under all pressures and conditions—under paved streets, under railroad tracks, over bridges, through rough and smooth country, and they are all enthusiastic with the good results secured, and the savings effected.

LEADITE saves at least 50% to 75%.

One contractor laid 1,665 feet of 6-in. pipe with LEADITE in 7½ hours with a gang of six men.

LEADITE Joints improve with age.

Leadite is the Pioneer Self-Caulking Substitute for Pig Lead

Be Sure It Is LEADITE and Accept No Imitations

THE LEADITE COMPANY, Inc.

100 So. Broad Street **Philadelphia, Pa., U. S. A.**

THE AMERICAN CITY

Fire Protection at Filling Stations

Filling stations are always a source of fire danger, because at any point where gasoline is transferred from one storage tank to another or from a storage tank to a car, there is always the possibility that something may occur which will ignite the vapors and cause an explosion. The Foamite-Childs Corporation, 82 Turner Street, Utica, N. Y., is now furnishing the sign reproduced below, to all filling stations which are equipped with Foamite equipment to prevent the spread of fire. Where this sign is displayed, customers and neighbors know that their property is protected against serious fire at all times and that the filling station or garage is made as safe from fire as it can be.

Over fifty-three million barrels of oil and gasoline in great storage-tanks are now protected

SIGNS LIKE THIS MEAN A LESSENING OF FIRE HAZARDS

from fire by the Foamite method of smothering fire under Firefoam. It is claimed that this method has never failed when properly installed and operated. Foamite equipment includes the 2½-gallon Model CA Foamite hand extinguisher, which generates about 20 gallons of Firefoam, throwing it over a distance of 35 feet. One or more extinguishers of this model will adequately safeguard the average filling station. The 40-gallon Foamite engine on wheels generates about 300 gallons of Firefoam, reaching fire as far as 75 feet away. This is the protection recommended for large garages and filling stations where considerable quantities of gasoline and oil are stored. Municipal officials will do well to see that filling stations throughout their cities are properly protected, thus reducing the fire hazard at these danger points.

A Rubbish and Trash Burner

Municipal galvanized ware of any type is more than a purchase—it is an investment. Therefore, only such material as is durable and able to stand rough usage should be purchased. Canco rubbish burners made by the American Can Company, Galvanized Ware Department, Toledo, Ohio, are durable and make an excellent piece of equipment for parks, cemeteries and similar places where rubbish accumulates and must be disposed of. The bodies are made of one piece of No. 12 gage open-hearth sheet steel, and their construction is such as to withstand heat and wear for a good period of time. The manufacturers claim that this burner will not warp from the heat. All the joints are welded and there are no rivets to loosen. There is no soldering on any of the parts, and after being made up, the whole burner is heavily galvanized.

A SUBSTANTIAL RUBBISH BURNER

This rubbish burner is also furnished with a detachable pan, which collects the ashes and prevents them from scattering around when the rubbish is being disposed of. The rubbish burner is made in two sizes, 15 x 26 inches and 18 x 30 inches, weighing 24 and 35 pounds respectively.

Lot Markers and Signs

Signs which instruct wanderers in parks to keep off the grass, or which are used to indicate the division lines of lots in cemeteries, or for property, should be neat and permanent. The W-C line of hot galvanized cast iron lot markers and signs, made by Wilcox, Crittenden & Co., Inc., Middletown, Conn., are clean-cut, clearly-read markers with a high degree of permanency. They are made of hot galvanized cast iron, cast in one piece so that they are practically indestructible.

A PERMANENT SIGN THAT IS EASILY READ

MUSHROOM
Reg. U.S. Pat. Off.
Traffic Lights

ESSCO MFG. CO.
PEORIA, ILLINOIS

 When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

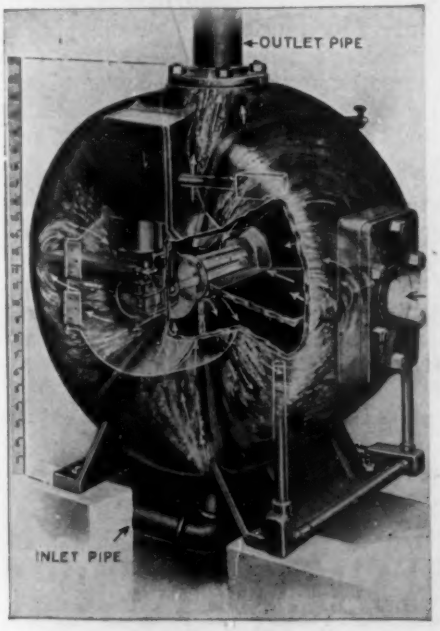
THE AMERICAN CITY

The Sterilization of Water in Swimming Pools by Ultra Violet Rays

The sterilization of swimming pools by means of ultra violet rays in connection with recirculating filtration systems has been developed by the R.U.V. Company, Inc., 383 Madison Avenue, New York City. The recirculating system is used where a sufficient stream of fresh, pure, wholesome water fit to drink is not available to be added to a swimming pool continuously and involves the use of filtration and sterilization, to keep the water in a strictly sanitary condition.

The recirculating system as installed by this company is composed of a pump, filter and ultra violet ray sterilizer, to which a heater is added where the temperature must be controlled. The pump provides the means of having a constantly inflowing stream of water. The sand filter provides a means of keeping the water clean and colorless and helps to increase the efficiency of the ultra violet ray sterilizer, which provides a positive means of destroying harmful bacteria in clear water without changing the taste, odor or temperature of the water, and without adding any chemical disinfectant. This gives as a final product a water from which all impurities have been removed and the bacteria killed and to which nothing has been added

Generally speaking, any pool using the recirculating system should have a pump with a capacity at least sufficient to turn over the entire pool contents in twelve hours' time. Any slower rate will not give sufficient velocity in the pool body to keep smaller particles in suspension and allow the filter and recirculating system to do its work properly. For a 50,000-gallon pool an R.U.V. ultra violet ray recirculating system has a capacity of 5,000 gallons per hour. This gives a ten-hour turnover.



PHANTOM VIEW OF A SINGLE-LAMP ULTRA VIOLET RAY STERILIZER

Ultra violet rays are produced artificially by means of electricity through the use of the quartz mercury vapor lamp. The lamp consists of a straight quartz tube, with a bowl at one end, partially filled with pure mercury. The air is then pumped from the quartz container, producing a good vacuum. Tungsten electric terminals are sealed in the ends of the lamp. The mercury vapor arc which gives off ultra violet rays is produced in the lamp by first passing direct current electricity through the mercury and then separating the mercury from the positive electric terminal. This causes the electric current to jump from the terminal to the mercury through mercury vapor. The arc in mercury vapor produces powerful ultra violet rays. In the R.U.V. sterilizer the vapor arc is started automatically when the electric switch controlling the lamp is thrown in. This is accomplished through the use of a simple magnet tilting device which is attached to one end of the sterilizer and supports one end of the lamp.

To efficiently use ultra violet rays for the sterilization of water, a flume or water container is cast out of brass and is so arranged and designed that a quartz lamp can be passed through the center. This lamp is protected from contact with the water by use of a quartz tube which is packed in the flume to withstand the water pressure. Baffles are arranged in the flume so as to agitate the water as it passes through the field of ultra violet rays. This design makes it positive that all bacteria will come in contact with the destructive rays and thus eliminates any possibility of deadly germs reaching the outlet. The stirring action of the water in passing around the baffles makes it impossible for bacteria to remain in a shadow which might be caused by particles in the water.

New De Laval Representatives

The De Laval Steam Turbine Company, Trenton, N. J., has announced that The Wm. Constable Company, Providence Bldg., Duluth, Minn., will henceforth represent it in northern Minnesota, northern Wisconsin, and the northern peninsula of Michigan.

G. C. Kahl, 404 Dwight Bldg., Kansas City, Mo., has been appointed sales representative in Arkansas, Nebraska, Kansas and Oklahoma, Iowa east of the north and south line through Des Moines, but not including Des Moines, and Missouri west of and including Jefferson City.

A Reflecting Traffic Control Device

The Traffic Reflection "Frog," manufactured by the Temple Signal Company, Box 1671, 522 Moss Ave., Indianapolis, Ind., is a heavy casting of pleasing design, large enough to be readily seen yet small enough to allow the safe passage of any automobile which finds it necessary for its own safety to ride over the device. The illuminating elements, which are reflectors, using the light from the automobile headlights, are so constructed that they are visible to the automobile driver only and are not faded by overhead street lights. Automobiles having sufficient light for their own safety and the safety of others have no trouble in distinctly seeing the red light at a safe distance.

The reflecting elements are fitted into the casting in a manner which requires only a moment. The hazard of breaking is taken care of by the

A reproduction of No. 18 of the Graham Brothers Series on "American Industries", as published in the Saturday Evening Post of August 9, 1924

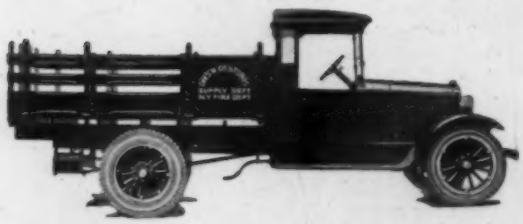
For the Public Good

The wealthiest institution in the world is the United States, with assets of one hundred and fifty billion dollars.

The safety of these enormous resources is dependent largely on the 770,000 officials and employes who administer our national, state, county and municipal governments. Often criticised, seldom commended, the great majority of these employes conduct public affairs in a capable, business-like manner, at salaries far below those paid by private corporations.

The selection of transportation equipment, particularly, affords public officials an opportunity to display good business judgment. And the constantly growing number of Graham Brothers Trucks in all branches of federal, state, county and municipal service, indicates that these officials are usually as insistent as any private buyer on better performance at lower cost.

The Federal Government, many states and counties and 185 municipalities own Graham Brothers Trucks—and find them eminently suited to the rigid requirements of public service.

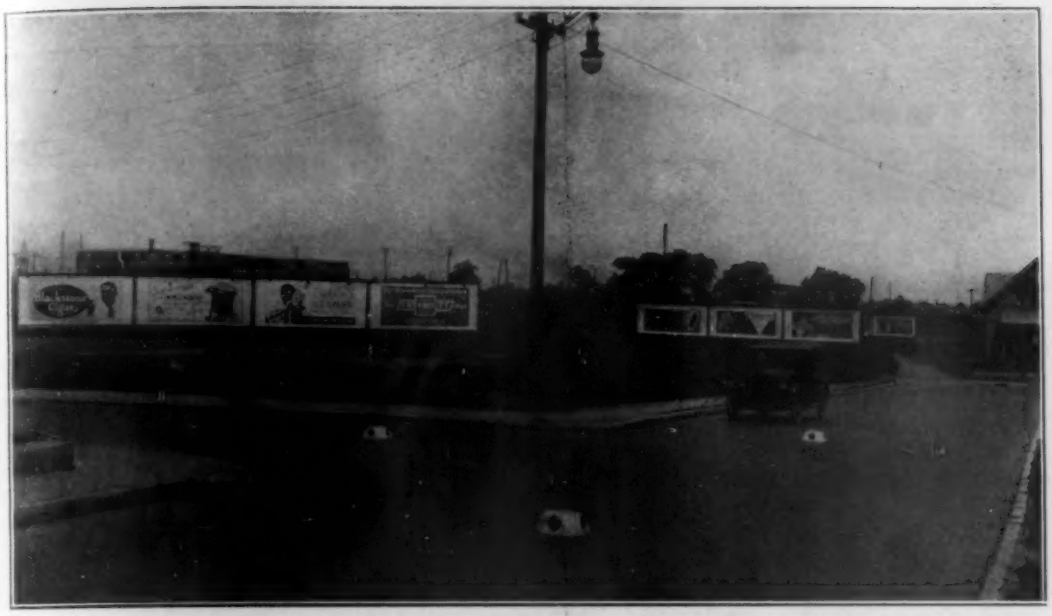


1 Ton Chassis, $1265; 1½ Ton, $1315; f. o. b. Detroit

GRAHAM BROTHERS
Detroit

GRAHAM BROTHERS TRUCKS

SOLD BY DODGE BROTHERS DEALERS EVERYWHERE



THREE REFLECTING TRAFFIC CONTROL DEVICES INSTALLED AT THREE-WAY CROSSING TO PREVENT CUTTING CORNERS

shape of the casting and the element is further protected by a spring at its back, so that should the element be struck, it would be pushed back into the casting and then rebound into place.

This unit, the first cost of which is its only cost, as it does not require electric current or the replacement of lamps, makes this traffic control device desirable for emergencies in large and small cities and towns. It is also readily used as a marker for safety aisles and zones, as well as to indicate the proper part for traffic to take in negotiating any corner.

A Successful Light-Weight Snow Guard

Highway officials are quite familiar with the snow fences used on open highways to effect a lull in the gale which is carrying snow, causing the snow to be deposited near the fence instead of drifting on to the highway. These fences are ordinarily rather bulky affairs and take up considerable space. The Wickwire Spencer Steel Corporation, 41 East 42nd Street, New York City, has developed a snow guard to take the place of the former bulky snow fence. This guard is a combination of hexagonal netting and wooden lattice strips, delivered in rolls of 50 linear feet. It has been subjected to the most rigid tests and found to fulfil its function of keeping roadways clear in heavy snows much more efficiently than the old fashioned, cumbersome wood snow guards. Its use reduces to a minimum the labor cost of erecting a snow guard in the fall and removing it in the spring, because it can be easily handled. It is so designed and constructed that it can be put in place on either level or uneven ground by two unskilled laborers.

The snow guard is 5 feet 6 inches high, and a 50-foot length when rolled is 30 inches in diameter. Each roll contains 11 steel posts, ¾-inch round, and made to extend into the ground a depth of 18 inches. They are sharply pointed to permit their being easily driven into frozen ground. The hexagonal netting is 3- by 6-inch mesh, No. 15 gage wire, and is heavily galvanized. In this mesh are interwoven ⅜ by ¾-inch lattice strips, spaced 4 inches on centers, leaving a space of 2 inches. Anchor pins, ¾-inch in diameter and 24 inches long, and guy wires made of No. 14 gage steel, each 72 inches long, are provided to anchor the snow guard at the position of each steel post and at the ends. The combination of steel posts and anchors will hold this snow guard in place against the strongest gale. The guard is approximately 50 per cent opening, allowing the eddying of winds, which causes the snow to pile up where it will not interfere with traffic.

Before placing this product on the market exhaustive tests were made by the engineers of the Wickwire Spencer Steel Corporation and the snow guard was placed in position along roadways where snow drifts are abnormally heavy. The heavy fall of snow during the latter part of the winter of 1924 indicated in these various positions the reliability of the product. Examination of the snow guard in the spring showed it to be in practically the same alignment as in the fall and unbroken in every respect.

THE FASCINATION OF A SWING—

as *old* as the human race, but ever *new* to each generation of children.